

Amendments to the Drawings:

Figures 1-26 have been amended to include the relevant sequence identifiers were appropriate. No new matter has been added.

Attachment: Replacement sheet
Annotated Marked-up Drawings

REMARKS

Amendments to the Specification

The specification has been amended to comply with the requirements of 37 C.F.R. 1.821-1.825. Specifically, sequence identifiers have been added to the Figures and to the specification at pages 7-9 and 24 to accompany the sequence disclosures that are encompassed by the definitions for nucleotide sequences as set forth in 37 C.F.R. 1.821(a)(1). Although these sequences were not identified by a SEQ ID NO in the specification, they were part of the Sequence Listing filed with the United States Patent and Trademark Office on July 19, 2004. Therefore, a substitute computer readable form (CRF) copy and a substitute paper copy of the “Sequence Listing” are not required. No new matter has been added by this amendment.

Rejection For Failure To Comply With 37 C.F.R. §§ 1.821-1.825

The application has been rejected for failing to comply with the requirements of 37 C.F.R. § 1.821. Specifically, the Office Action states that the application references sequences by the identifier Oligo(s) rather than the proper identifier SEQ ID NO (citing page 30, line 5 as an example).

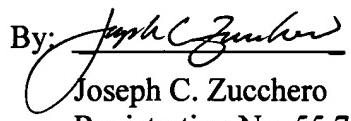
Applicants respectfully disagree. Nucleotide and/or amino acid sequences as used in §§ 1.821 through 1.825 are interpreted to mean an unbranched sequence of four or more amino acids or an unbranched sequence of ten or more nucleotides. 37 C.F.R. § 1.821(a)(1) states that nucleotides are intended to embrace only those nucleotides that can be represented using the symbols set forth in WIPO Standard ST.25 (1998), and (a)(2) states that Amino acids are those L-amino acids commonly found in naturally occurring proteins and are listed in WIPO Standard ST.25 (1998). Since the disclosure in the application, for example, at pages 29 and 30, do not meet these definitions, the application complies with the Sequence Listing requirements. Applicants are allowed to be their own lexicographers and can give whatever name they choose to the disclosed oligonucleotides. Sequence identifiers are only required where the sequence is disclosed. Reconsideration and withdrawal of the rejection are respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

Dated: *October 23 2006*
Keown & Associates
500 West Cummings Park
Suite 1200
Woburn, MA 01801
Telephone: 781/938-1805
Facsimile: 781/938-4777

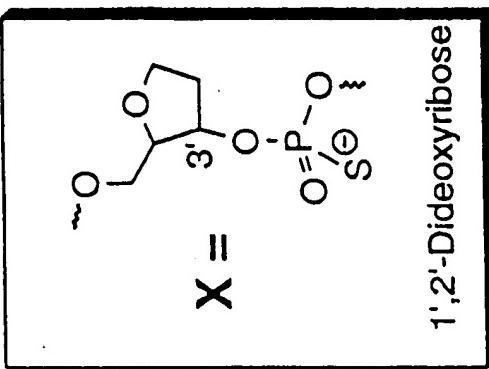
By: 
Joseph C. Zucchero
Registration No. 55,762



OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 8</u>	5'-CCTACTAGCGTTCTCATC-3' (133-1)
<u>SEQ ID NO.: 9</u>	5'-CCTACTAGCXTTCTCATC-3' (139-2)
<u>SEQ ID NO.: 10</u>	5'-CCTACTAXCGTTCTCATC-3' (133-2)
<u>SEQ ID NO.: 11</u>	5'-CCTACTXGGTTCTCATC-3' (139-3)
<u>SEQ ID NO.: 12</u>	5'-CCTACXAGCGTTCTCATC-3' (133-3)
<u>SEQ ID NO.: 13</u>	5'-CCTAXTAGCGTTCTCATC-3' (139-4)
<u>SEQ ID NO.: 14</u>	5'-CCTXCTAGCGTTCTCATC-3' (133-4)
<u>SEQ ID NO.: 15</u>	5'-CCTXCTAGC _U TTCTCATC-3' (145-10a)
<u>SEQ ID NO.: 16</u>	5'-CCTACTAGCGXTCTCATC-3' (133-5)
<u>SEQ ID NO.: 17</u>	5'-CCTACTAGCGTXCTCATC-3' (139-7)
<u>SEQ ID NO.: 18</u>	5'-CCTACTAGCGTTXICATC-3' (133-6)
<u>SEQ ID NO.: 19</u>	5'-CCTACTAGCGTTCXCATC-3' (139-8)
<u>SEQ ID NO.: 20</u>	5'-CCTXXTAGCGTTCTCATC-3' (133-12)
<u>SEQ ID NO.: 21</u>	5'-XXTACTAGCGTTCTCATC-3' (139-6)
<u>SEQ ID NO.: 22</u>	5'-CCTACTAGCGTTCX _X ATC-3' (139-9)
<u>SEQ ID NO.: 23</u>	5'-CCTXCTXGGTTCTCATC-3' (145-10b)

1/53

FIG. 1A

2/53

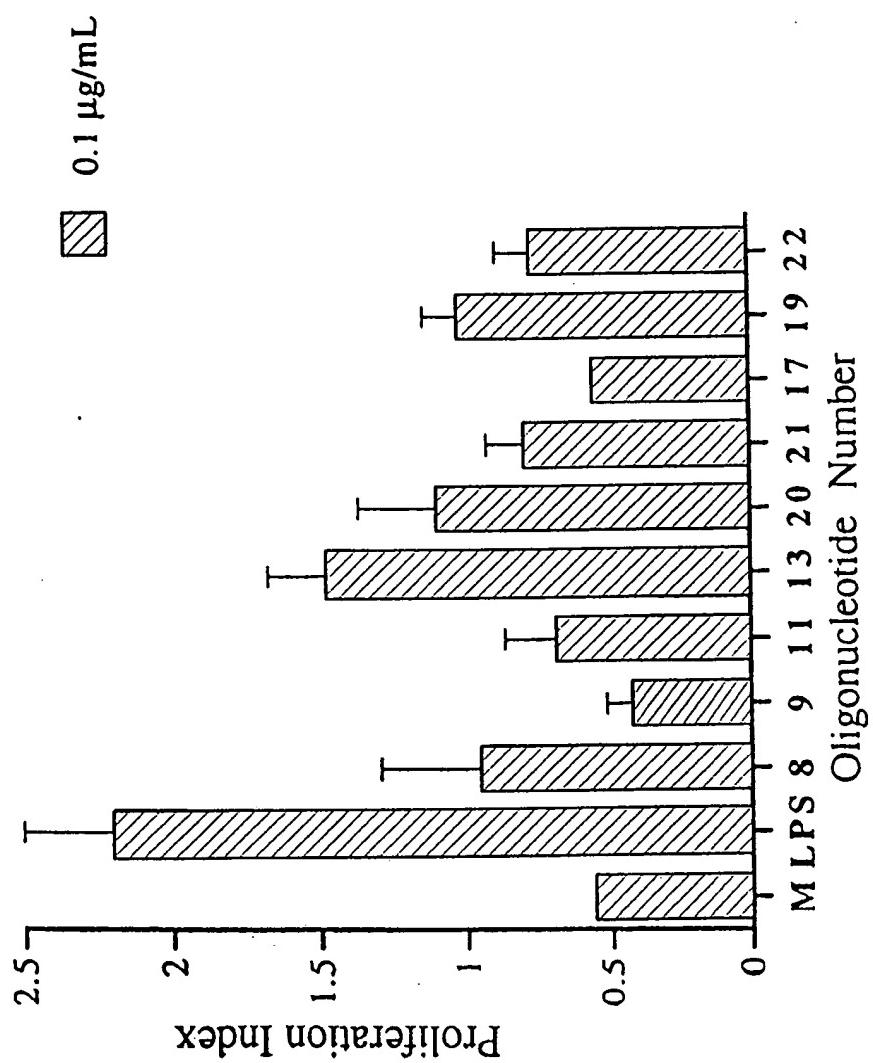
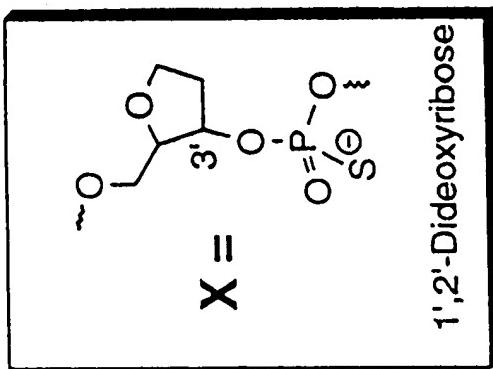


FIG. 1B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 8</u>	5'-CCTACTAG <u>G</u> TCTCATC-3' (133-1)
<u>SEQ ID NO.: 9</u>	5'-CCTACTAG <u>C</u> TTCTCATC-3' (139-2)
<u>SEQ ID NO.: 10</u>	5'-CCTACTAX <u>G</u> TTCTCATC-3' (133-2)
<u>SEQ ID NO.: 11</u>	5'-CCTACTX <u>G</u> GTTCATC-3' (139-3)
<u>SEQ ID NO.: 12</u>	5'-CCTACK <u>A</u> GGTCTCATC-3' (133-3)
<u>SEQ ID NO.: 13</u>	5'-CCTAX <u>T</u> AGGTTCTCATC-3' (139-4)
<u>SEQ ID NO.: 14</u>	5'-CCTX <u>C</u> TAGGGTTCTCATC-3' (133-4)
<u>SEQ ID NO.: 15</u>	5'-CCTX <u>C</u> TAG <u>G</u> TTCTCATC-3' (145-10a)
<u>SEQ ID NO.: 16</u>	5'-CCTACTAG <u>G</u> X <u>T</u> CTCATC-3' (133-5)
<u>SEQ ID NO.: 17</u>	5'-CCTACTAG <u>G</u> T <u>X</u> CTCATC-3' (139-7)
<u>SEQ ID NO.: 18</u>	5'-CCTACTAG <u>G</u> TT <u>X</u> TCATC-3' (133-6)
<u>SEQ ID NO.: 19</u>	5'-CCTACTAG <u>G</u> TT <u>X</u> TCATC-3' (139-8)
<u>SEQ ID NO.: 20</u>	5'-CCTXX <u>T</u> AG <u>G</u> TTCTCATC-3' (133-12)
<u>SEQ ID NO.: 21</u>	5'-XX <u>T</u> ACTAG <u>G</u> TTCTCATC-3' (139-6)
<u>SEQ ID NO.: 22</u>	5'-CCTACTAG <u>G</u> TT <u>C</u> XXATC-3' (139-9)
<u>SEQ ID NO.: 23</u>	5'-CCTX <u>C</u> TX <u>G</u> GTTCATC-3' (145-10b)

3/53

FIG. 2A

4/53

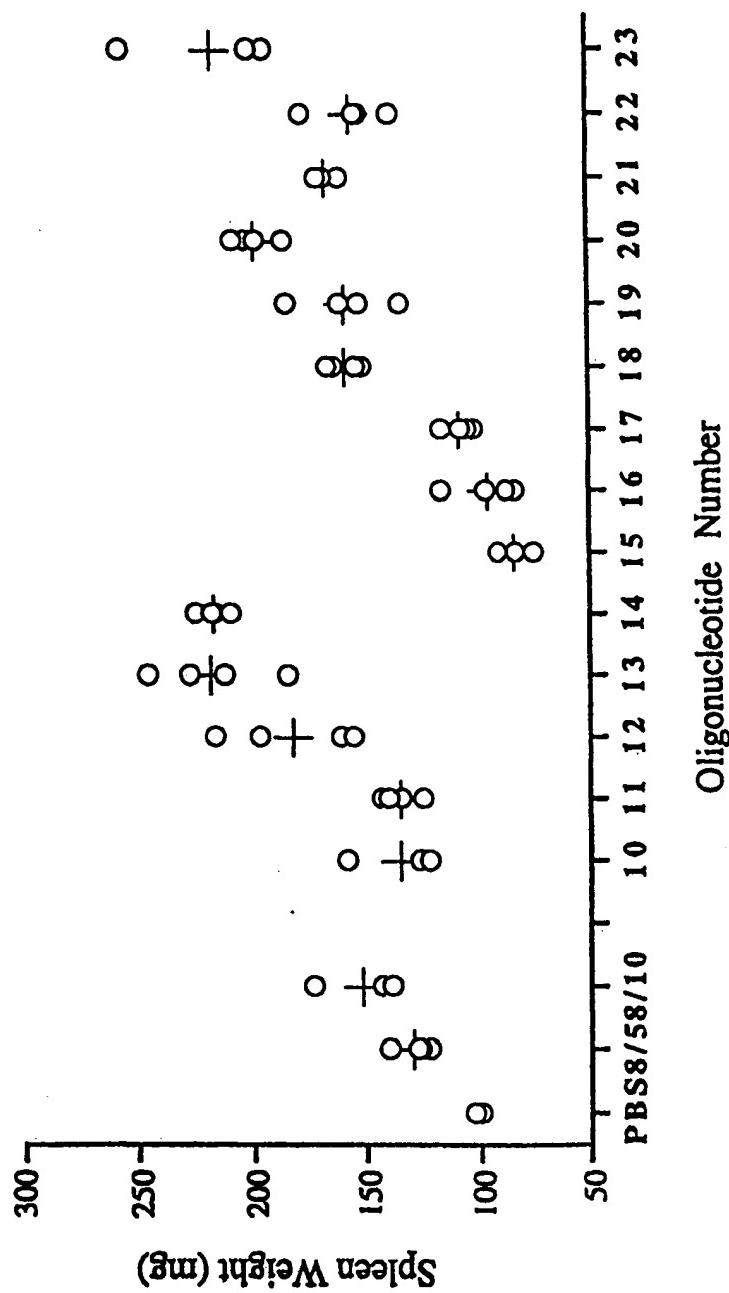


FIG. 2B

5/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u>	5'-CTATCTGAC <u>G</u> TCTCTGT-3' (131-1)
<u>SEQ ID NO.: 105</u>	5'-CTATCTGAXGTTCTCTGT-3' (131-13)
<u>SEQ ID NO.: 106</u>	5'-CTATCTGXCGTTCTCTGT-3' (131-2)
<u>SEQ ID NO.: 107</u>	5'-CTATCXGACGGTTCTCTGT-3' (131-3)
<u>SEQ ID NO.: 108</u>	5'-CTAXCTGACGGTTCTCTGT-3' (131-4)
<u>SEQ ID NO.: 109</u>	5'-CTATCTGACGXCTCTGT-3' (131-5)
<u>SEQ ID NO.: 110</u>	5'-CTATCTGACGTTCTCTGT-3' (131-6)
	1',2'-Dideoxyribose

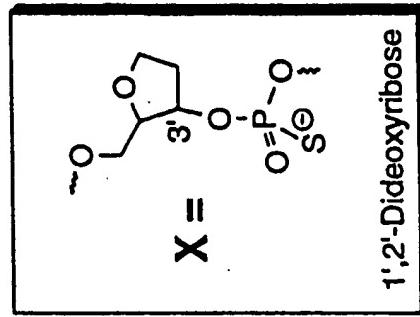


FIG. 3A

6/53

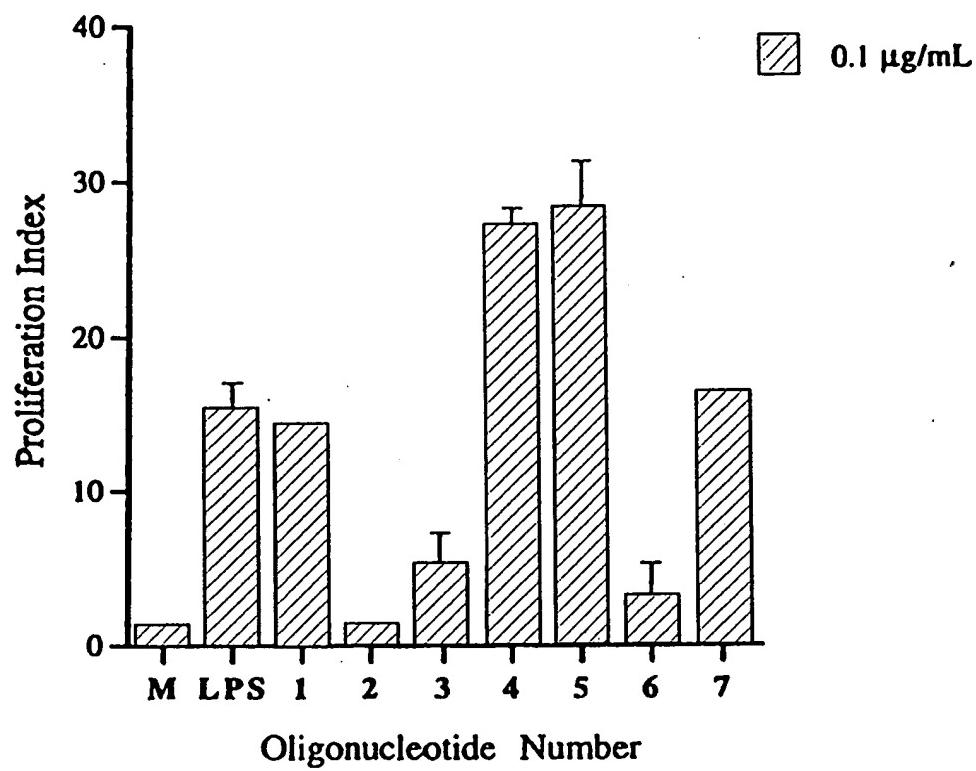
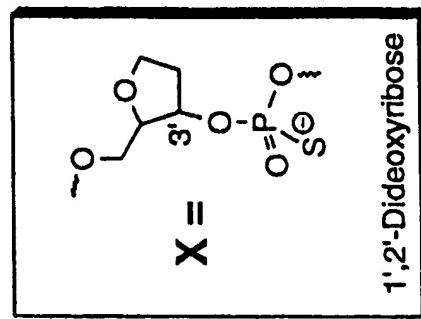


FIG. 3B

7/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
SEQ ID NO.: 1	5'-CTATCTGACGTTCTCTGT-3' (131-1)
SEQ ID NO.: 105	5'-CTATCTGAXGTTCTCTGT-3' (131-13)
SEQ ID NO.: 106	5'-CTATCTGXCGTTCTCTGT-3' (131-2)
SEQ ID NO.: 107	5'-CTATCXGACGTTCTCTGT-3' (131-3)
SEQ ID NO.: 108	5'-CTAXCTGACGTTCTCTGT-3' (131-4)
SEQ ID NO.: 109	5'-CTATCTGACGXTCCTGT-3' (131-5)
SEQ ID NO.: 110	5'-CTATCTGACGTTCTGT-3' (131-6)

FIG. 4A

8/53

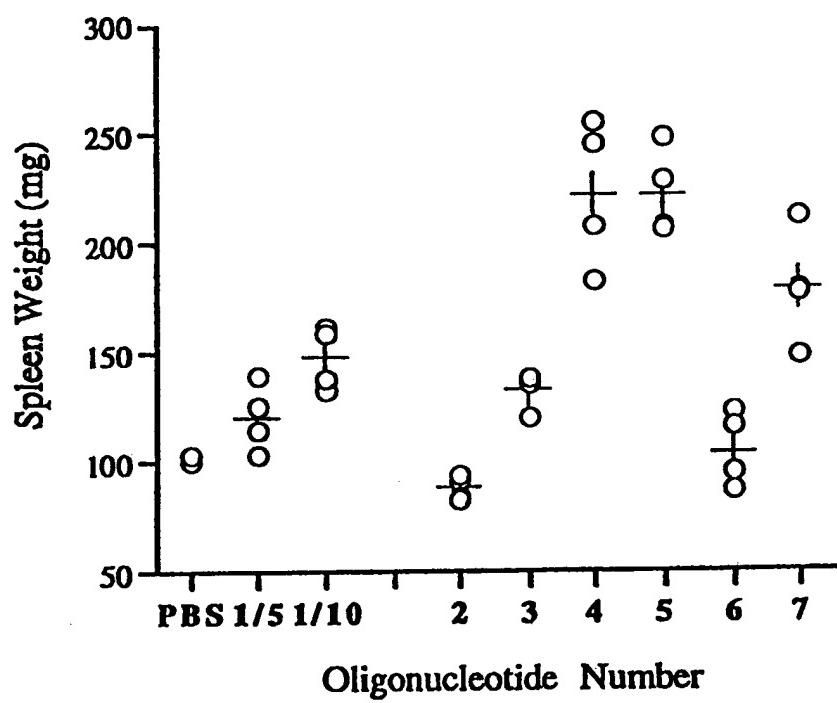
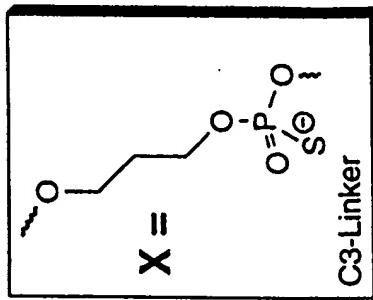


FIG. 4B

9/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 8</u>	133-1
<u>SEQ ID NO.: 24</u>	141-2
<u>SEQ ID NO.: 25</u>	141-3
<u>SEQ ID NO.: 26</u>	141-4
<u>SEQ ID NO.: 27</u>	141-5
<u>SEQ ID NO.: 28</u>	141-6
<u>SEQ ID NO.: 29</u>	141-7
<u>SEQ ID NO.: 30</u>	141-8
<u>SEQ ID NO.: 31</u>	141-9
<u>SEQ ID NO.: 1</u>	131-1
<u>SEQ ID NO.: 32</u>	137-2
<u>SEQ ID NO.: 33</u>	137-3
<u>SEQ ID NO.: 34</u>	137-4

FIG. 5A

10/53

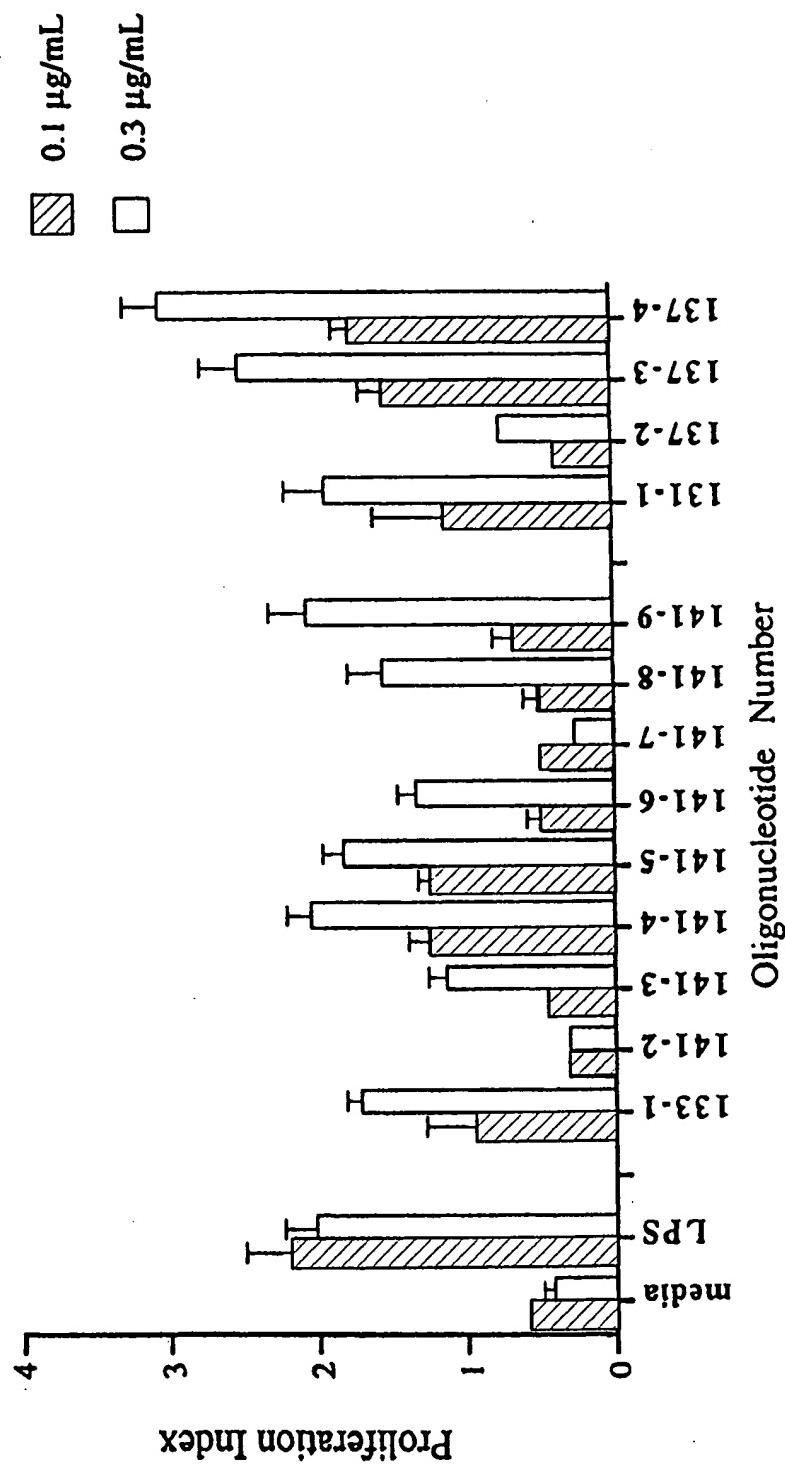
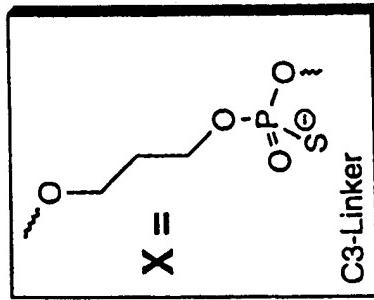


FIG. 5B

11/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 8</u>	133-1 5'-CCTACTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 24</u>	141-2 5'-CCTACTAGCXTTCTCATC-3'
<u>SEQ ID NO.: 25</u>	141-3 5'-CCTACTXGCGTTCTCATC-3'
<u>SEQ ID NO.: 26</u>	141-4 5'-CCTAXTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 27</u>	141-5 5'-CCTXXTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 28</u>	141-6 5'-XXTACTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 29</u>	141-7 5'-CCTACTAGCGTXCTCATC-3'
<u>SEQ ID NO.: 30</u>	141-8 5'-CCTACTAGCGTTCXCATC-3'
<u>SEQ ID NO.: 31</u>	141-9 5'-CCTACTAGGGTTCXATC-3'
<u>SEQ ID NO.: 1</u>	131-1 5'-CTATCTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 32</u>	137-2 5'-CTATCTGXCGTTCTCTGT-3'
<u>SEQ ID NO.: 33</u>	137-3 5'-CTATCXGACGTTCTCTGT-3'
<u>SEQ ID NO.: 34</u>	137-4 5'-CTAXCTGACGTTCTCTGT-3'

FIG. 6A

12/53

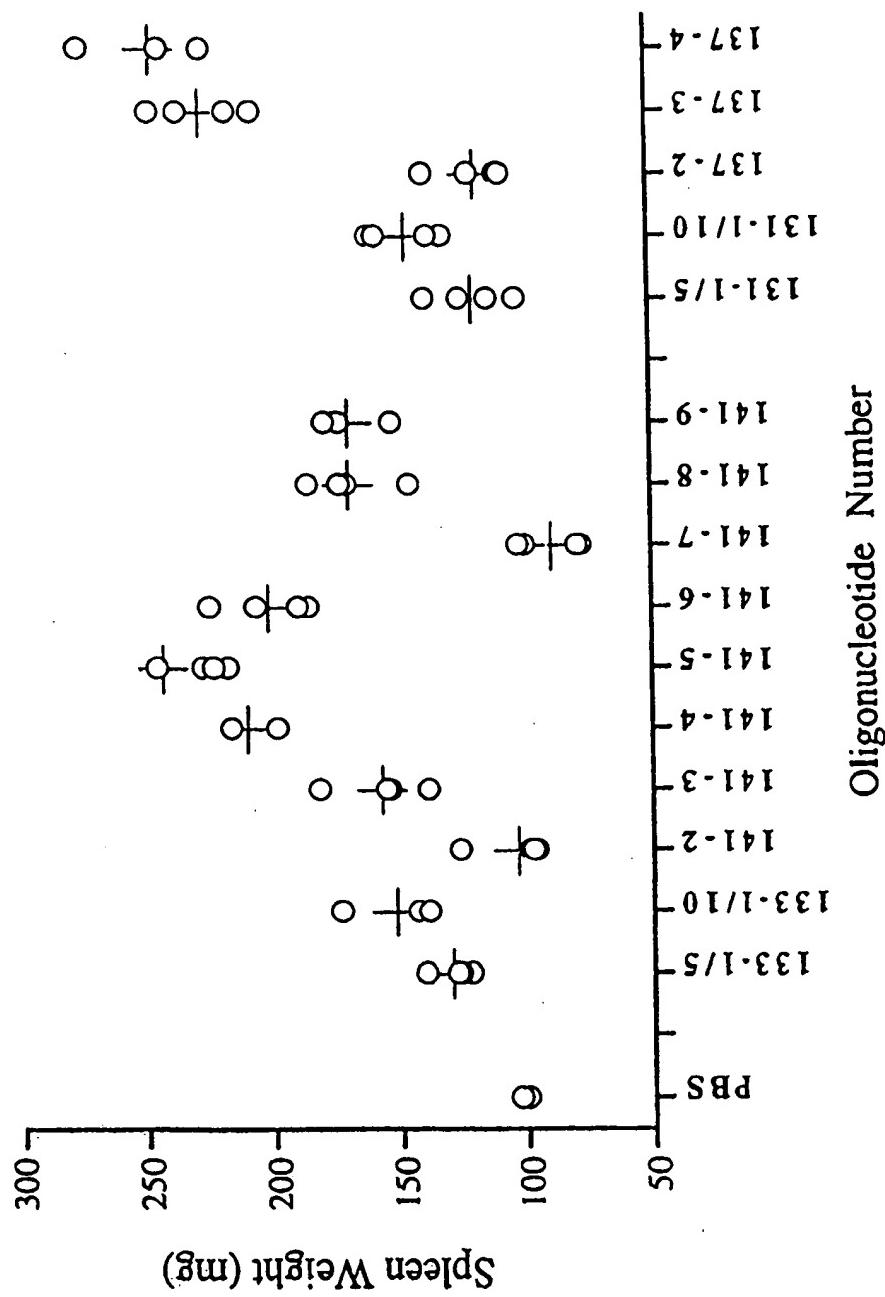
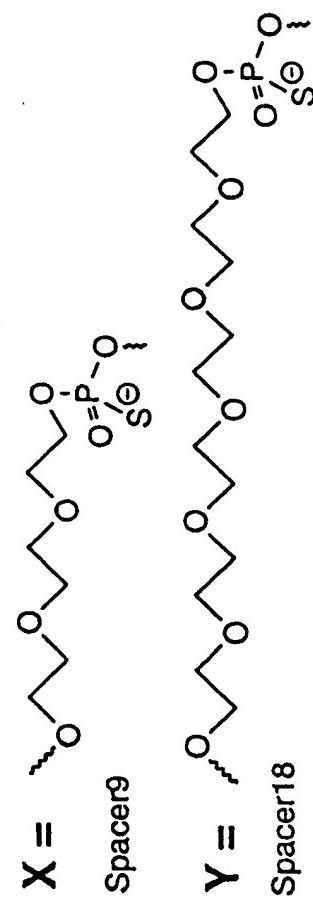


FIG. 6B

13/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u>	1 5'-CTATCTGACGGTTCTGT-3' (131-1)
<u>SEQ ID NO.: 35</u>	2 5'-CTAXCTGACGTTCTGT-3' (153-1)
<u>SEQ ID NO.: 36</u>	3 5'-CTATCTGACGTTCXCTGT-3' (153-2)
<u>SEQ ID NO.: 37</u>	4 5'-CTAYCTGACGTTCTGT-3' (153-3)
<u>SEQ ID NO.: 38</u>	5 5'-CTATCTGACGTTCYCTGT-3' (153-4)
<u>SEQ ID NO.: 8</u>	6 5'-CCTACTAGCGTTCTCATC-3' (133-1)
<u>SEQ ID NO.: 39</u>	7 5'-CCTXCTAGCGTTCTCATC-3' (155-1)
<u>SEQ ID NO.: 40</u>	8 5'-CCTACTAGCGTTCXCATC-3' (155-2)
<u>SEQ ID NO.: 41</u>	9 5'-CCTYCTAGCGTTCTCATC-3' (155-3)
<u>SEQ ID NO.: 42</u>	10 5'-CCTACTAGCGTTCYCATC-3' (155-4)

FIG. 7A

14/53

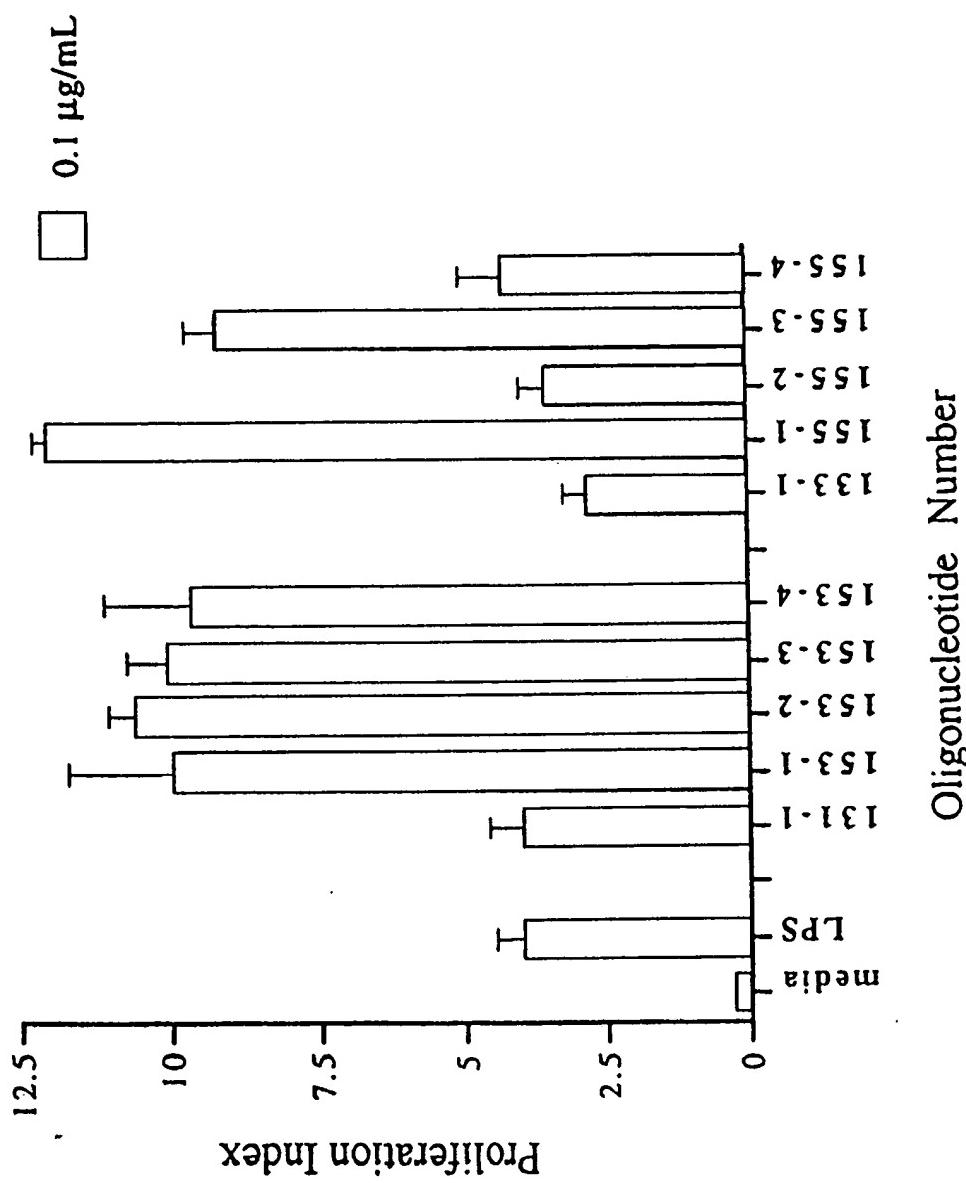
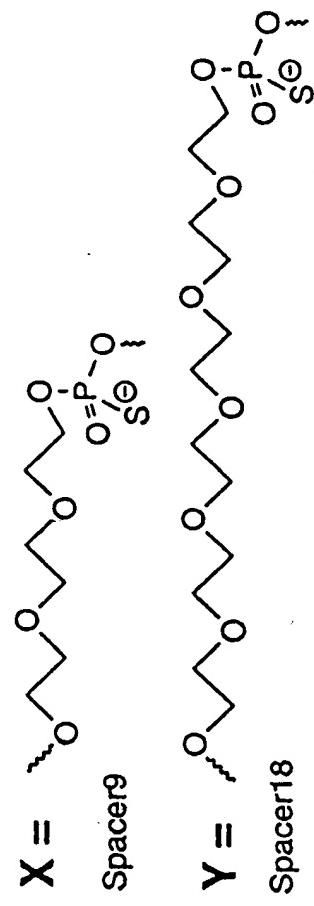


FIG. 7B

15/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u>	1 5'-CTATCTGACGTTCTCTGT-3' (131-1)
<u>SEQ ID NO.: 35</u>	2 5'-CTAXCTGACGTTCTCTGT-3' (153-1)
<u>SEQ ID NO.: 36</u>	3 5'-CTATCTGACGTTCXCTGT-3' (153-2)
<u>SEQ ID NO.: 37</u>	4 5'-CTAYCTGACGTTCTCTGT-3' (153-3)
<u>SEQ ID NO.: 38</u>	5 5'-CTATCTGACGTTCYCTGT-3' (153-4)
<u>SEQ ID NO.: 8</u>	6 5'-CCTACTAGCGTTCTCATC-3' (133-1)
<u>SEQ ID NO.: 39</u>	7 5'-CCTXCTAGCGTTCTCATC-3' (155-1)
<u>SEQ ID NO.: 40</u>	8 5'-CCTACTAGCGTTCXCATC-3' (155-2)
<u>SEQ ID NO.: 41</u>	9 5'-CCTYCTAGCGTTCTCATC-3' (155-3)
<u>SEQ ID NO.: 42</u>	10 5'-CCTACTAGCGTTCYCATC-3' (155-4)

FIG. 8A

16/53

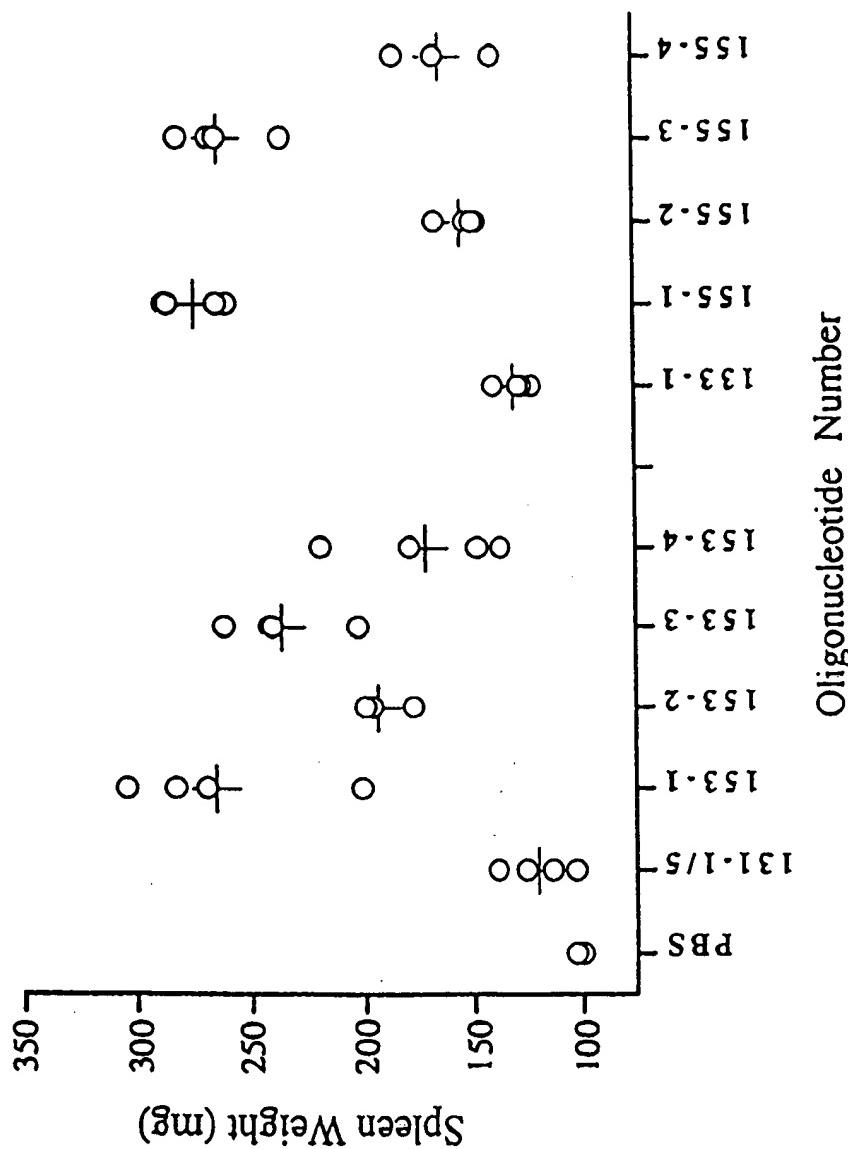


FIG. 8B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u>	5'-CTATCTGACGGTTCTCTGT-3' (131-1)
<u>SEQ ID NO.: 43</u>	5'-CTATCTGXCGTTCTCTGT-3' (157-1)
<u>SEQ ID NO.: 44</u>	5'-CTATCTXACGTTCTCTGT-3' (157-2)
<u>SEQ ID NO.: 45</u>	5'-CTAXCTGACGGTTCTCTGT-3' (157-3)
<u>SEQ ID NO.: 46</u>	5'-CTATCTGACGTXCTCTGT-3' (157-4)
<u>SEQ ID NO.: 47</u>	5'-CTATCTGACGGTCXCTGT-3' (157-5)

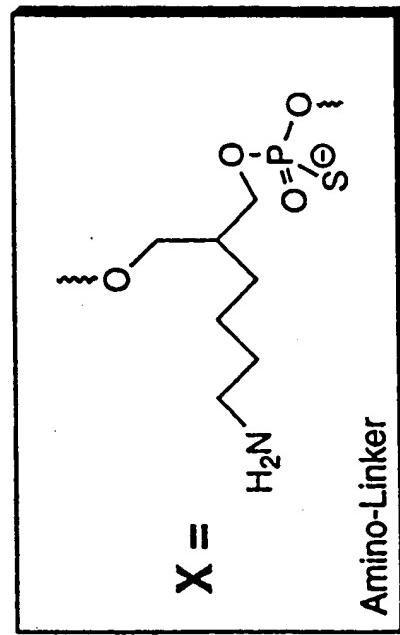


FIG. 9A

18/53

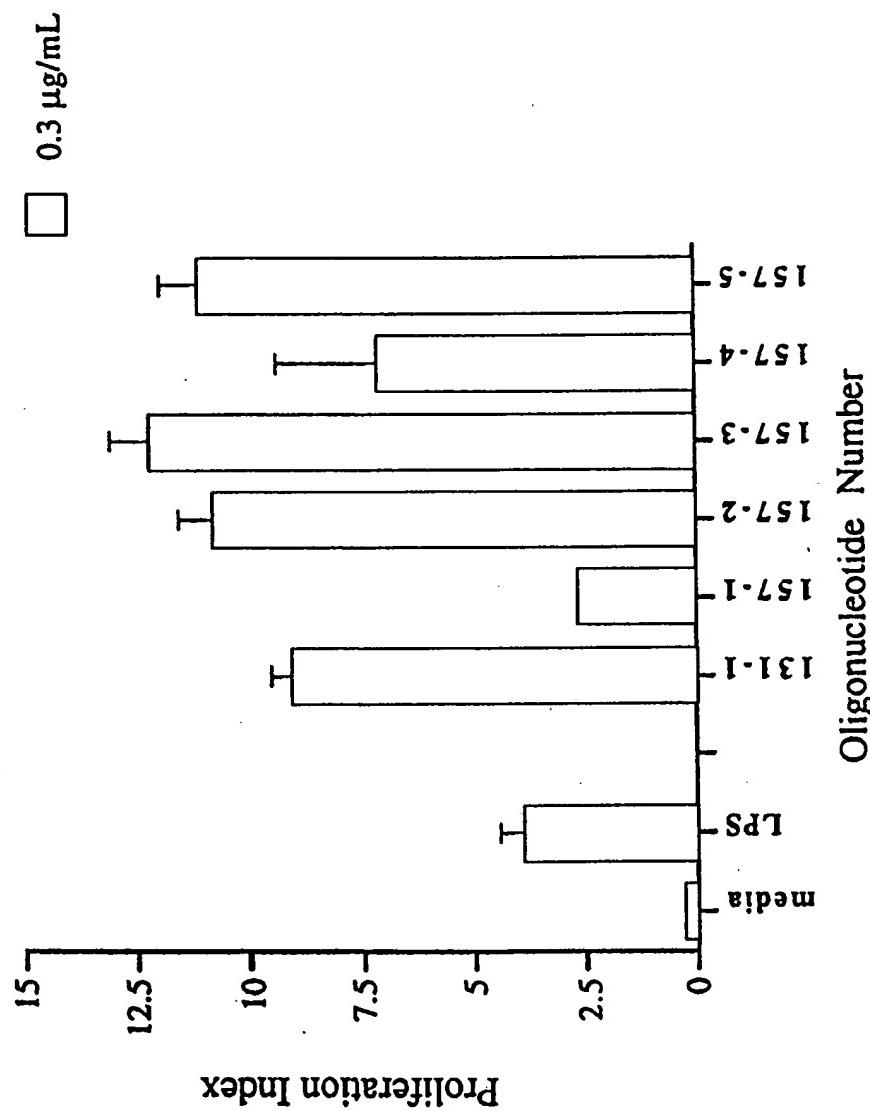
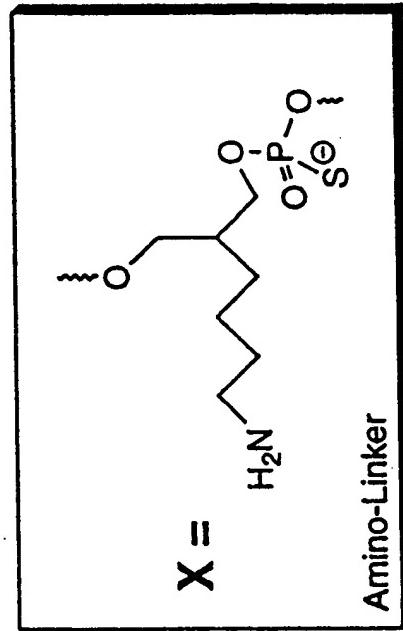


FIG. 9B

19/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u>	5'-CTATCTGACGTTCTCTGT-3' (131-1)
<u>SEQ ID NO.: 43</u>	5'-CTATCTGXC GTTCTCTGT-3' (157-1)
<u>SEQ ID NO.: 44</u>	5'-CTATCTXACGTTCTCTGT-3' (157-2)
<u>SEQ ID NO.: 45</u>	5'-CTAXCTGACGTTCTCTGT-3' (157-3)
<u>SEQ ID NO.: 46</u>	5'-CTATCTGACGTXCTCTGT-3' (157-4)
<u>SEQ ID NO.: 47</u>	5'-CTATCTGACGTTCXCTGT-3' (157-5)

FIG. 10A

20/53

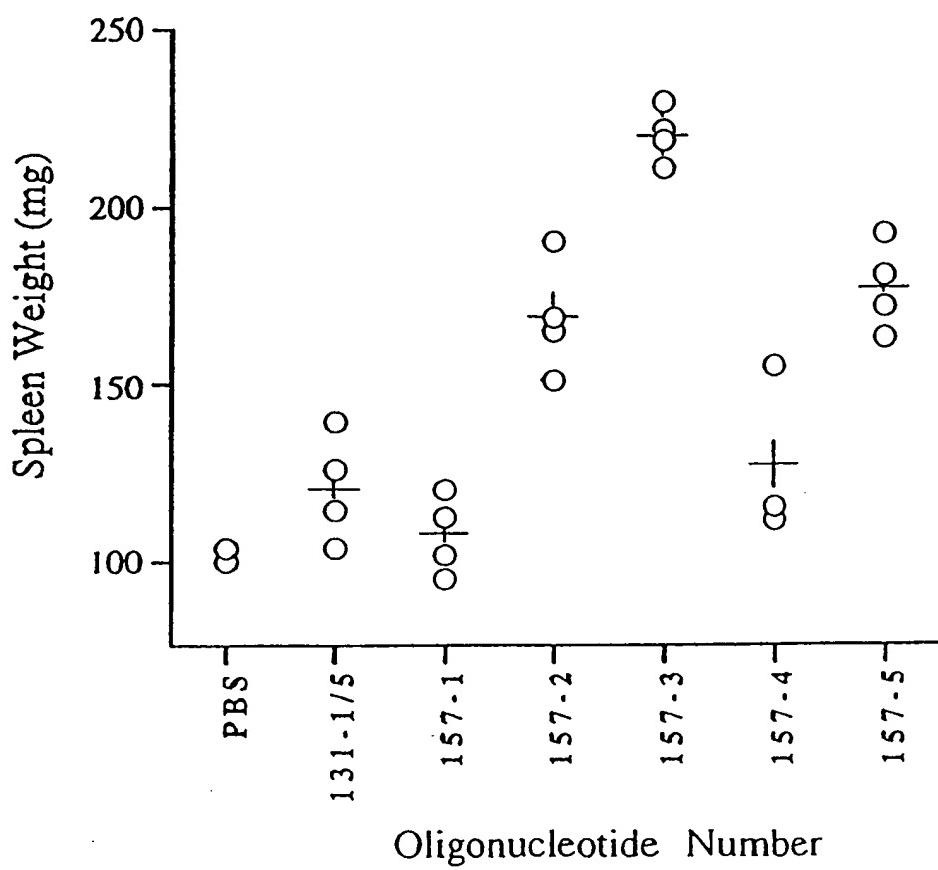


FIG. 10B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u> 131-1	5'-CTATCTGACGTTCCTCTGT-3'
<u>SEQ ID NO.: 48</u> 159-1	5'-CTATCTGACXTTCTCTGT-3'
<u>SEQ ID NO.: 49</u> 159-2	5'-CTATCTGAXGTTCCTCTGT-3'
<u>SEQ ID NO.: 50</u> 159-3	5'-CTATXTGACGTTCCTCTGT-3'
<u>SEQ ID NO.: 51</u> 159-4	5'-CTATCTGACGTTCTXTGT-3'
<u>SEQ ID NO.: 8</u> 133-1	5'-CCTACTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 52</u> 161-1	5'-CCTACTAGCXTTCTCATC-3'
<u>SEQ ID NO.: 53</u> 161-2	5'-CCTACTAGXGTTCCTCATC-3'
<u>SEQ ID NO.: 54</u> 161-3	5'-CCTACTAXCGTTCTCATC-3'
<u>SEQ ID NO.: 55</u> 161-4	5'-CCTACTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 56</u> 161-5	5'-CCTACTAGCGTTCTXATC-3'

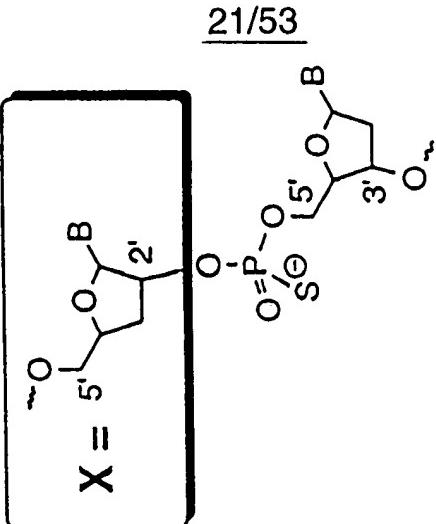
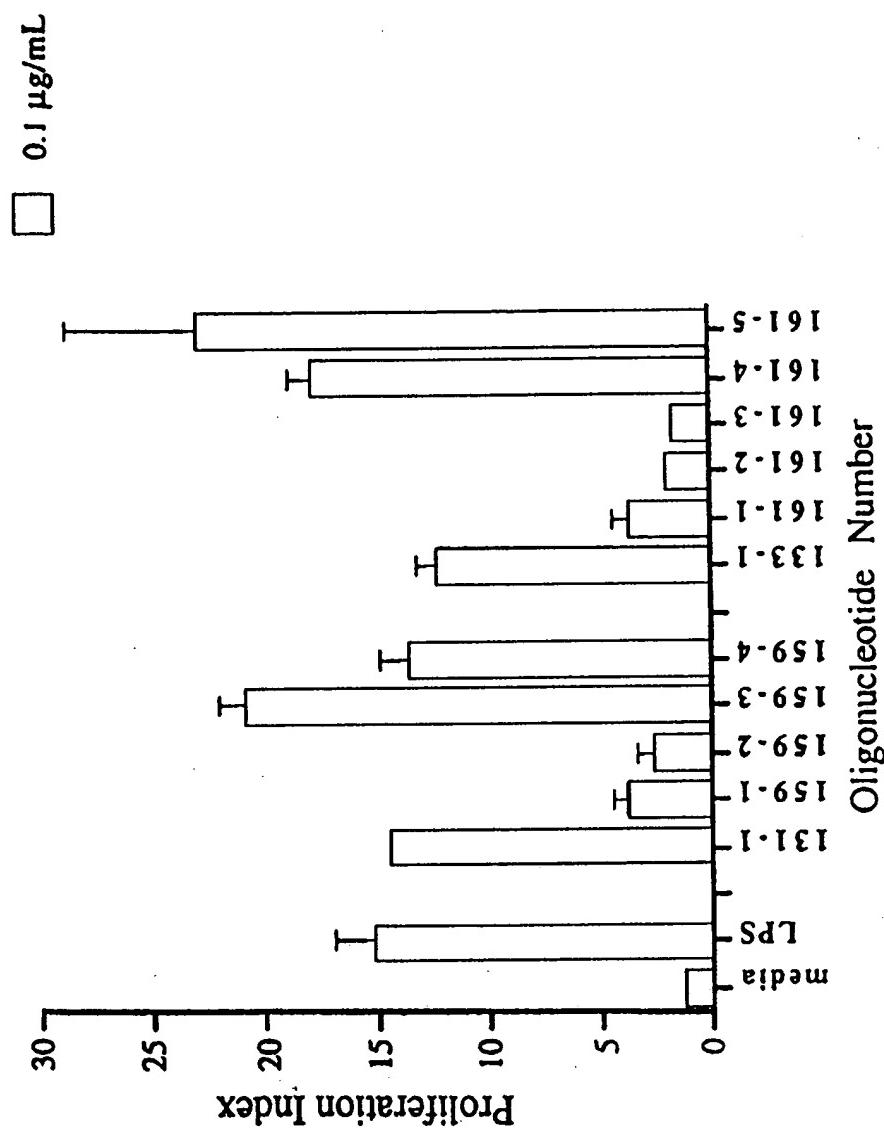
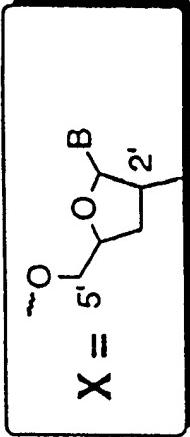
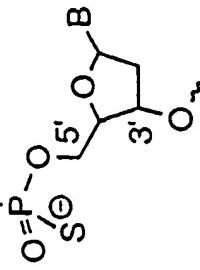


FIG. 11A

22/53FIG. 11B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u> 131-1	5'-CTATCTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 48</u> 159-1	5'-CTATCTGACXTTCTCTGT-3'
<u>SEQ ID NO.: 49</u> 159-2	5'-CTATCTGAXGTTCTCTGT-3'
<u>SEQ ID NO.: 50</u> 159-3	5'-CTATXTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 51</u> 159-4	5'-CTATCTGACGTTCTXTGT-3'
<u>SEQ ID NO.: 8</u> 133-1	5'-CCTACTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 52</u> 161-1	5'-CCTACTAGCXTTCTCATC-3'
<u>SEQ ID NO.: 53</u> 161-2	5'-CCTACTAGXGTTCTCATC-3'
<u>SEQ ID NO.: 54</u> 161-3	5'-CCTACTAXCGTTCTCATC-3'
<u>SEQ ID NO.: 55</u> 161-4	5'-CCTAXTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 56</u> 161-5	5'-CCTACTAGCGTTCTXATC-3'

23/53

3'-Deoxynucleoside

FIG. 12A

24/53

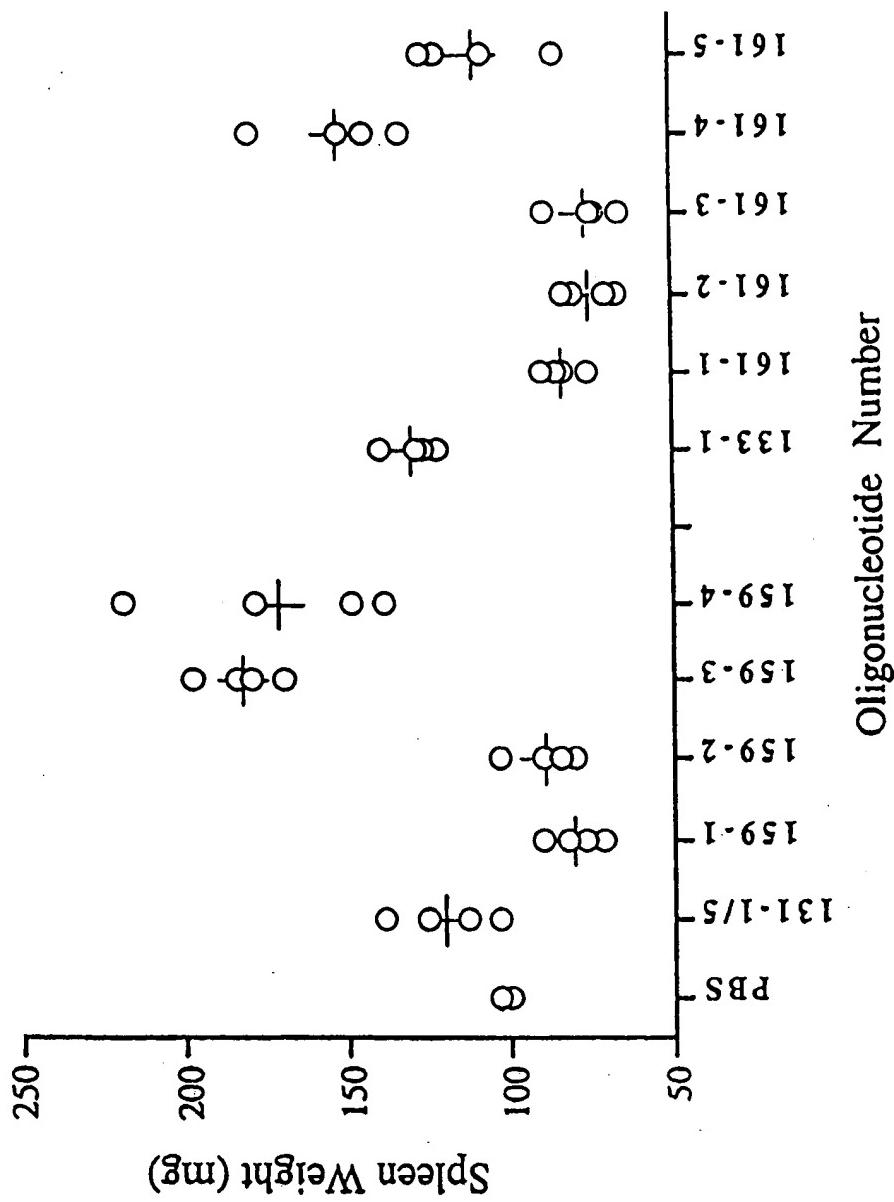


FIG. 12B

25/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

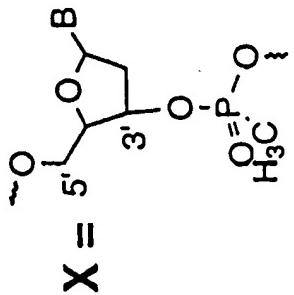
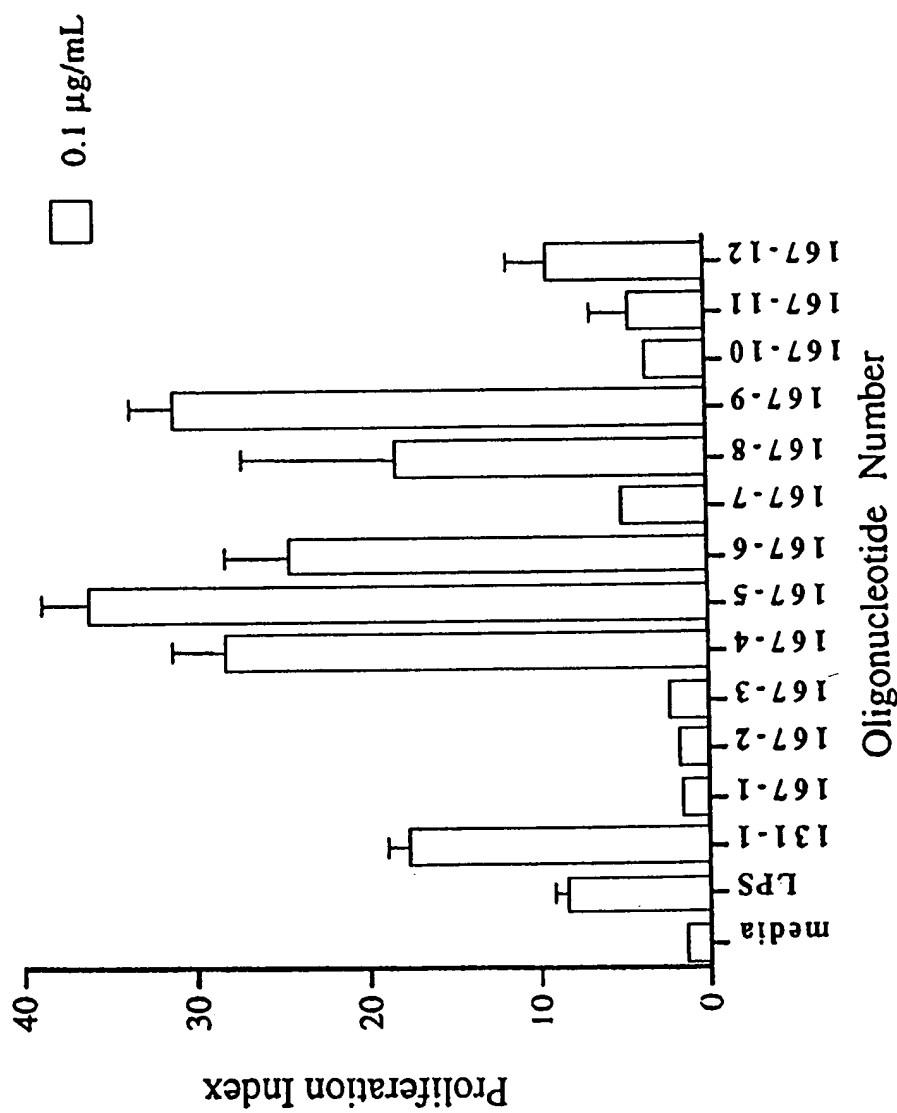
Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u> 167-1	5'-CTATCTGACGGTCTCTGT-3'  $X = \begin{array}{c} \sim O \\ \\ \text{C} \\ \\ \text{O} \end{array}$
<u>SEQ ID NO.: 57</u> 167-1	5'-CTATCTGXGGTCTCTGT-3'
<u>SEQ ID NO.: 58</u> 167-2	5'-CTATCTXACGGTCTCTGT-3'
<u>SEQ ID NO.: 59</u> 167-3	5'-CTATCXGACGGTCTCTGT-3'
<u>SEQ ID NO.: 60</u> 167-4	5'-CTATXTGACGGTCTCTGT-3'
<u>SEQ ID NO.: 61</u> 167-5	5'-CTAXCTGACGGTCTCTGT-3'
<u>SEQ ID NO.: 62</u> 167-6	5'-CTXXCTGACGGTCTCTGT-3'
<u>SEQ ID NO.: 63</u> 167-7	5'-CTATCTGACGXCTCTGT-3'
<u>SEQ ID NO.: 64</u> 167-8	5'-CTATCTGACGTXCTCTGT-3'
<u>SEQ ID NO.: 65</u> 167-9	5'-CTATCTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 66</u> 167-10	5'-CTATCTGACGGTCTCTGT-3'
<u>SEQ ID NO.: 67</u> 16711	5'-CTATCTGACGGTCTCTGT-3'
<u>SEQ ID NO.: 68</u> 167-12	5'-CTATCTGACGGTCTXXGT-3'

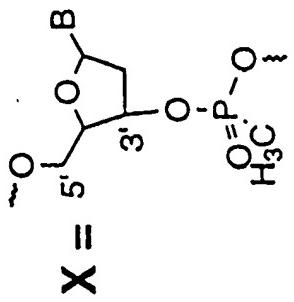
FIG. 13A

26/53FIG. 13B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u> 131-1	5'-CTATCTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 57</u> 167-1	5'-CTATCTGXCGTTCTCTGT-3'
<u>SEQ ID NO.: 58</u> 167-2	5'-CTATCTXACGTTCTCTGT-3'
<u>SEQ ID NO.: 59</u> 167-3	5'-CTATCXGACGTTCTCTGT-3'
<u>SEQ ID NO.: 60</u> 167-4	5'-CTATXTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 61</u> 167-5	5'-CTAXCTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 62</u> 167-6	5'-CTXXCTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 63</u> 167-7	5'-CTATCTGACGXCTCTGT-3'
<u>SEQ ID NO.: 64</u> 167-8	5'-CTATCTGACGTXCTCTGT-3'
<u>SEQ ID NO.: 65</u> 167-9	5'-CTATCTGACGTTXCTGT-3'
<u>SEQ ID NO.: 66</u> 167-10	5'-CTATCTGACGTTCXCTGT-3'
<u>SEQ ID NO.: 67</u> 16711	5'-CTATCTGACGTTCTXTGT-3'
<u>SEQ ID NO.: 68</u> 167-12	5'-CTATCTGACGTTCTXXGT-3'

27/53



Methyl-phosphonate

FIG. 14A

28/53

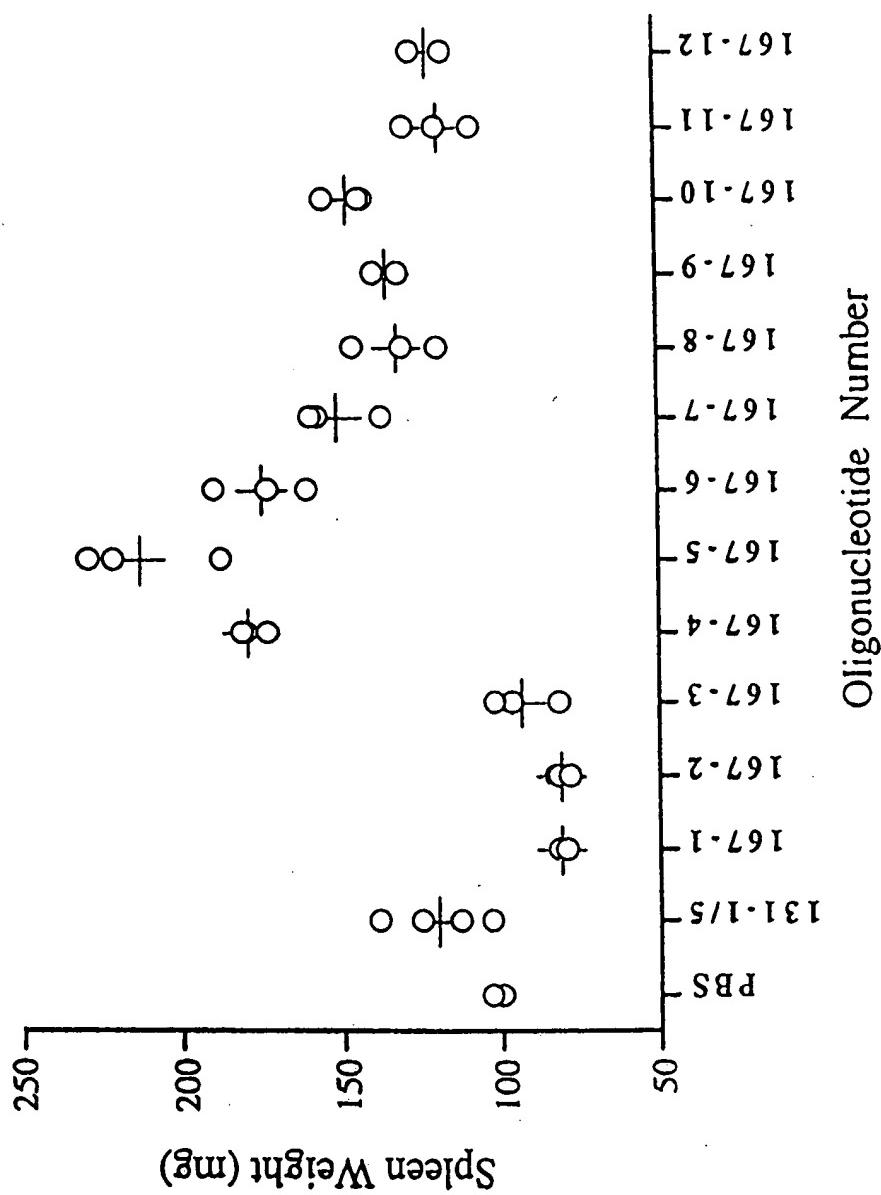


FIG. 14B

29/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 69</u>	113-1 5'-TCCATGACGTTCTGATGC-3'
<u>SEQ ID NO.: 70</u>	23-1 5'-TCATGXCGTTCTGATGC-3'
<u>SEQ ID NO.: 71</u>	23-3 5'-TCACXGACGTTCTGATGC-3'
<u>SEQ ID NO.: 72</u>	29-2 5'-TYYATGACGGTCTGATGC-3' Diagram of a phosphorothioate linkage: A 5' carbon atom is bonded to an oxygen atom (top), a 3' carbon atom (bottom), and a sulfur atom (right). The sulfur atom is bonded to two oxygen atoms (top-right and bottom-right). The top-right oxygen atom is bonded to a phosphate group (O-P-O-S). The bottom-right oxygen atom is bonded to an 'Ry' group (2'-O-Methoxyethoxyribonucleoside).

R_x = 2'-O-Methylribonucleoside
R_y = 2'-O-Methoxyethoxyribonucleoside

FIG. 15A

30/53

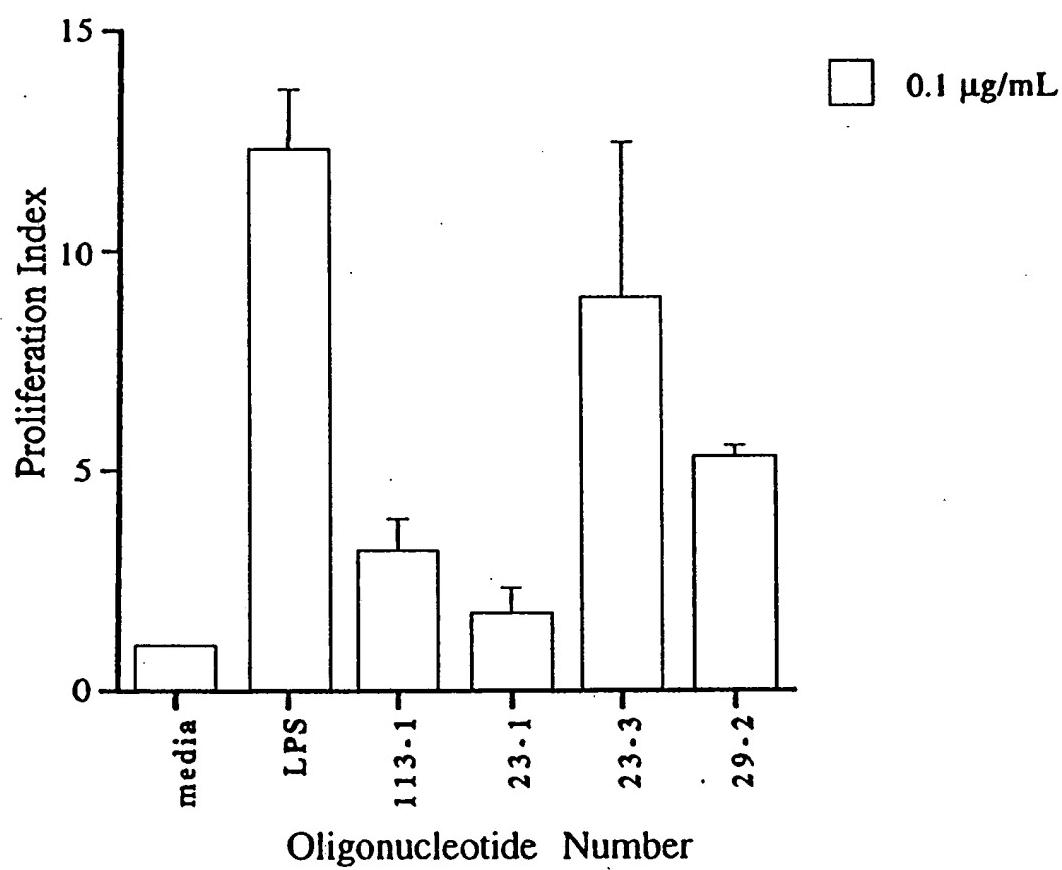
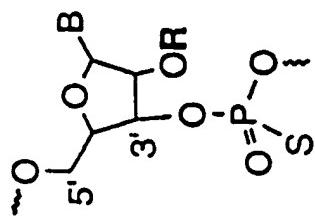


FIG. 15B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

<i>Oligo No.</i>	<i>Sequence & Modification</i>
<u>SEQ ID NO.: 69</u>	113-1 5'-TCCATGACGTTCCCTGATGC-3'
<u>SEQ ID NO.: 70</u>	23-1 5'-TCCATGXCGTTCCCTGATGC-3'
<u>SEQ ID NO.: 71</u>	23-3 5'-TCCAXGACGTTCCCTGATGC-3'
<u>SEQ ID NO.: 72</u>	29-2 5'-TYYATGACGGTCCCTGATGC-3'



$R_x = 2'$ -O-Methylribonucleoside
 $R_y = 2'$ -O-Methoxyethoxyribonucleoside

FIG. 16A

32/53

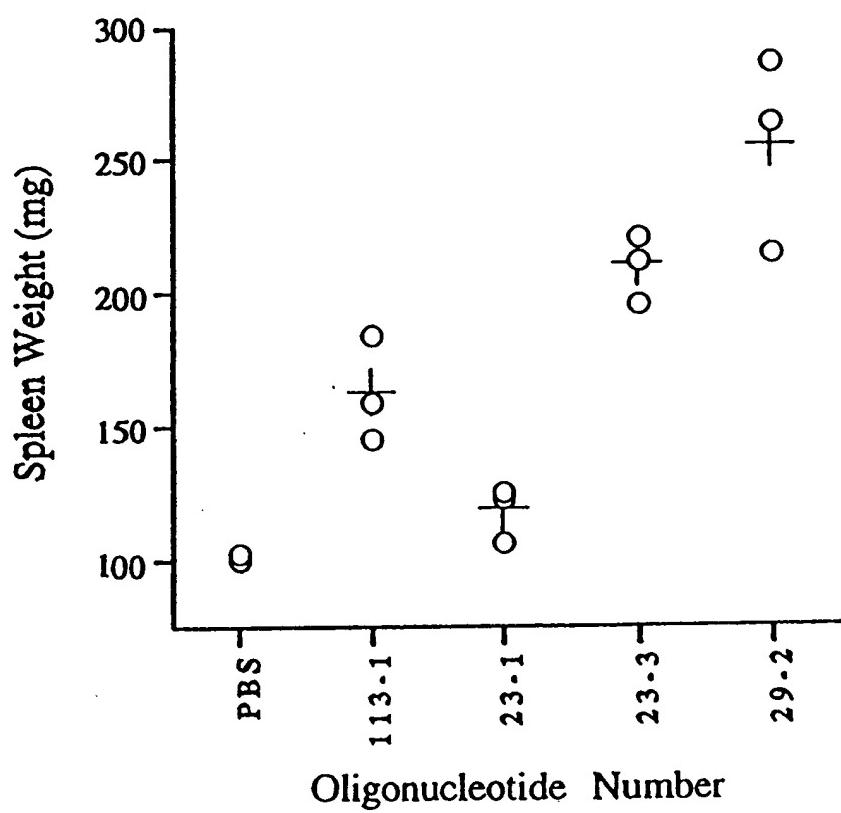


FIG. 16B

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 73</u> 1	5'-G A G A A C G C T C G A C C T T-3' 5'-G A G A A C G C T C G A C C T T-3' → 5'-G A G A A C G C T C G A C C T T-3'
<u>SEQ ID NO.: 74</u> 2	5'-G A G A A C G C T C G A C C T T-3' → 5'-G A G A A C G C T C G A C C T T-3'
<u>SEQ ID NO.: 75</u> 3	3'-T T C C A G C T C G C A A G A G-5' ← 5'-G A G A A C G C T C G A C C T T-3'
<u>SEQ ID NO.: 76</u> 4	5'-G A G A A C G C T C G A C C T T-3' → 3'-T T C C A G C T C G C A A G A G-5'
<u>SEQ ID NO.: 77</u> 5	5'-T C T C C C A G C G T G C G C C A T-3'
<u>SEQ ID NO.: 78</u> 6	5'-T C C C A G C G T G C G C C A T-3' → 5'-T C C C A G C G T G C G C C A T-3'
<u>SEQ ID NO.: 79</u> 7	3'-T A C C G C G T G C G A C C C T-5' ← 5'-T C C C A G C G T G C G C C A T-3'
<u>SEQ ID NO.: 80</u> 8	5'-T C C C A G C G T G C G C C A T-3' → 3'-T A C C G C G T G C G A C C C T-5'

33/53FIG. 17A

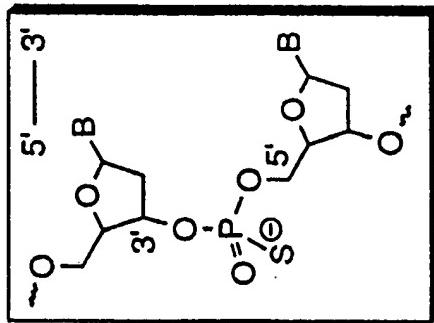
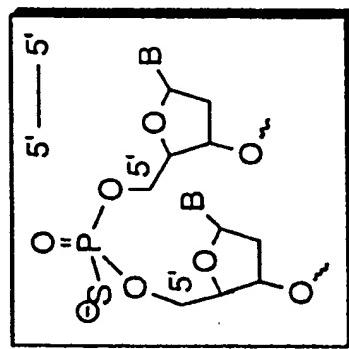
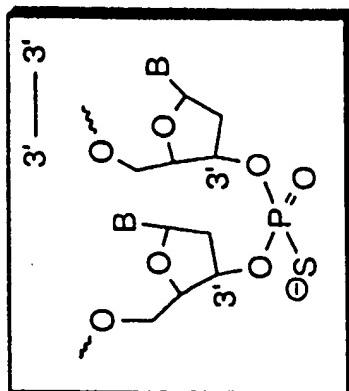
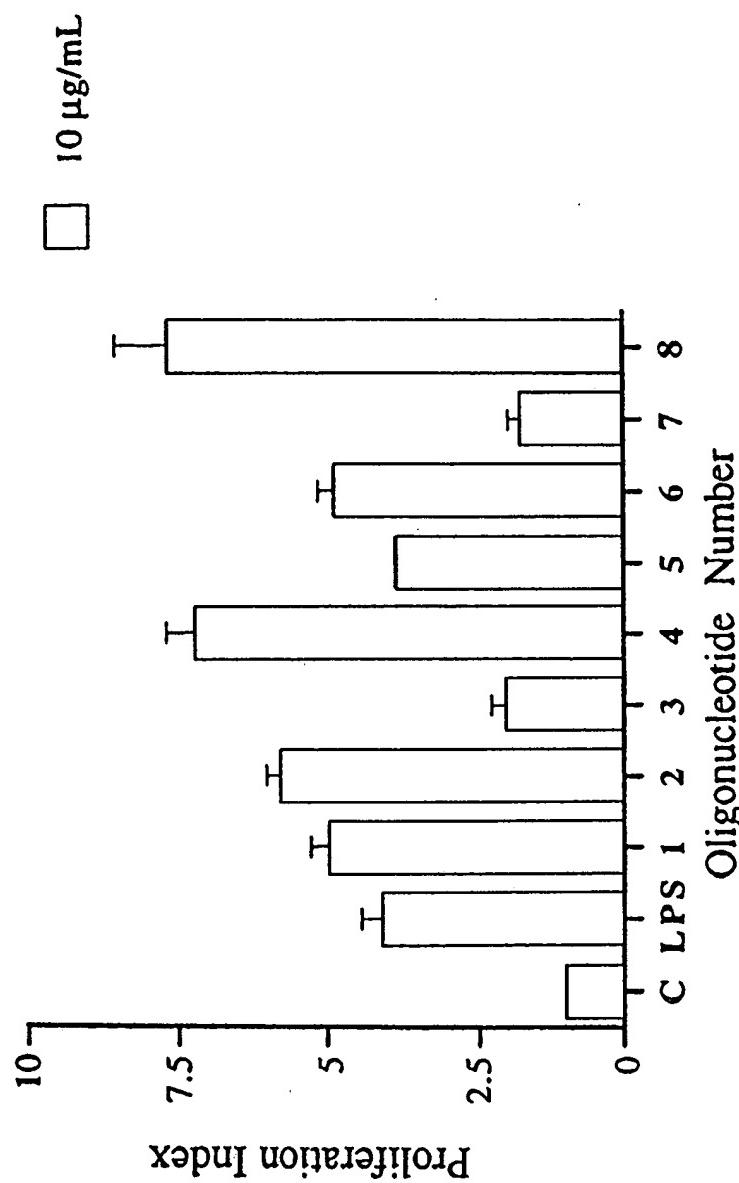
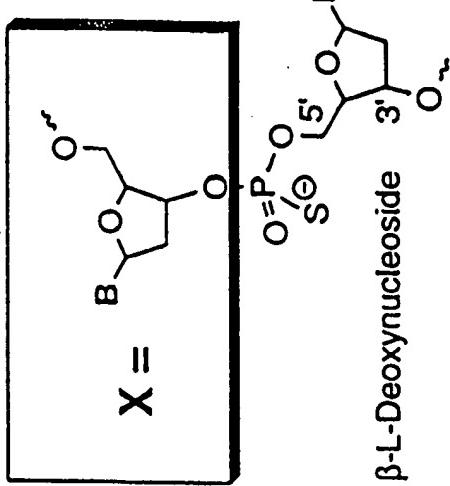
34/53

FIG. 17B

35/53FIG. 17C

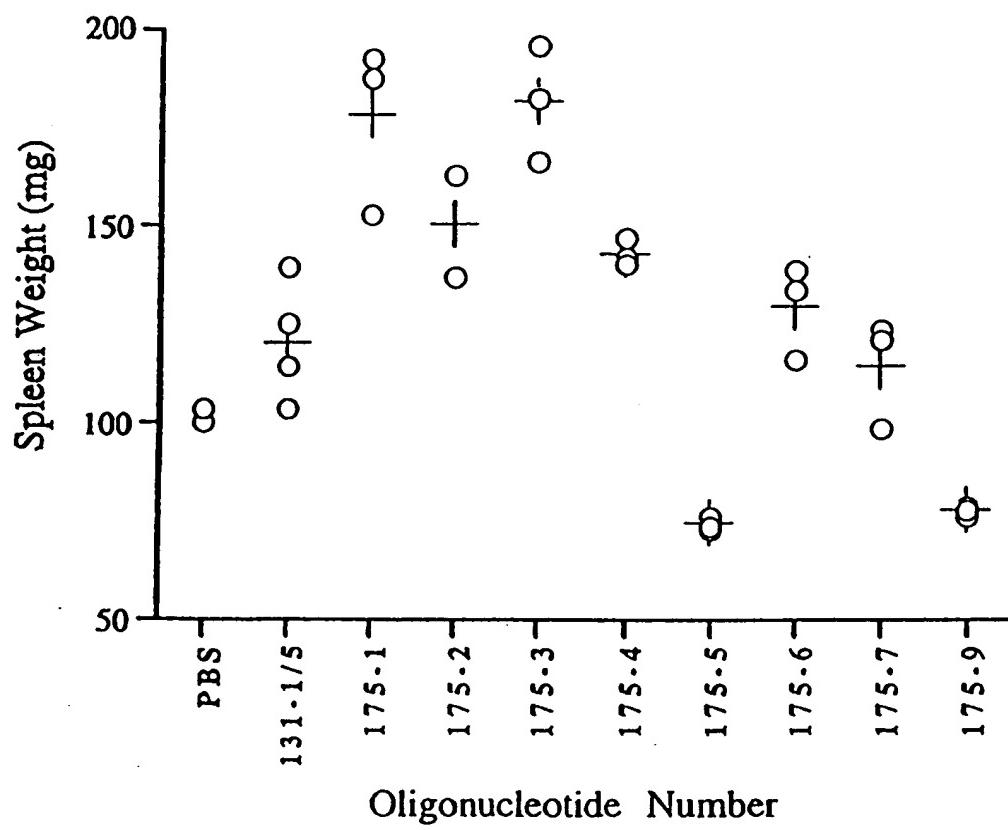
OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u> 131-1	5'-CTATCTGACGTTCTGTGT-3'
<u>SEQ ID NO.: 81</u> 175-1	5'-CTATXTGACGTTCTGTGT-3'
<u>SEQ ID NO.: 82</u> 175-2	5'-CTATCTGACGTTCXCTGTGT-3'
<u>SEQ ID NO.: 83</u> 175-3	5'-CTAXXTGACGTTCTGTGT-3'
<u>SEQ ID NO.: 84</u> 175-4	5'-CTATCTGACGTTCXXTGTGT-3'
<u>SEQ ID NO.: 85</u> 175-5	5'-CTATCTGAXXTTCTGTGT-3'
<u>SEQ ID NO.: 86</u> 175-6	5'-CTATCTXACGTTCTGTGT-3'
<u>SEQ ID NO.: 87</u> 175-7	5'-CTATCTGACGTXCTGTGT-3'
<u>SEQ ID NO.: 88</u> 175-9	5'-CTATCTGACGTTCTGTGT-3' (all-β-L-DNA/PS)



36/53

FIG. 18A

37/53FIG. 18B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 1</u> 131-1	5'-CTATCTGACGTTCTCTGT-3' $X = \begin{array}{c} \sim O \\ \\ 5' - C - O - Y - B \\ \\ 3' - C - O - O - C = CH \\ \\ O = P - O - S \end{array}$
<u>SEQ ID NO.: 89</u> 173-1	5'-CTATCTGACGTTCTCTGT-3'
<u>SEQ ID NO.: 90</u> 173-2	5'-CTATCTGACGTTCTCTGT-3'

2'-O-Propargyl-ribonucleoside

FIG. 19A

39/53

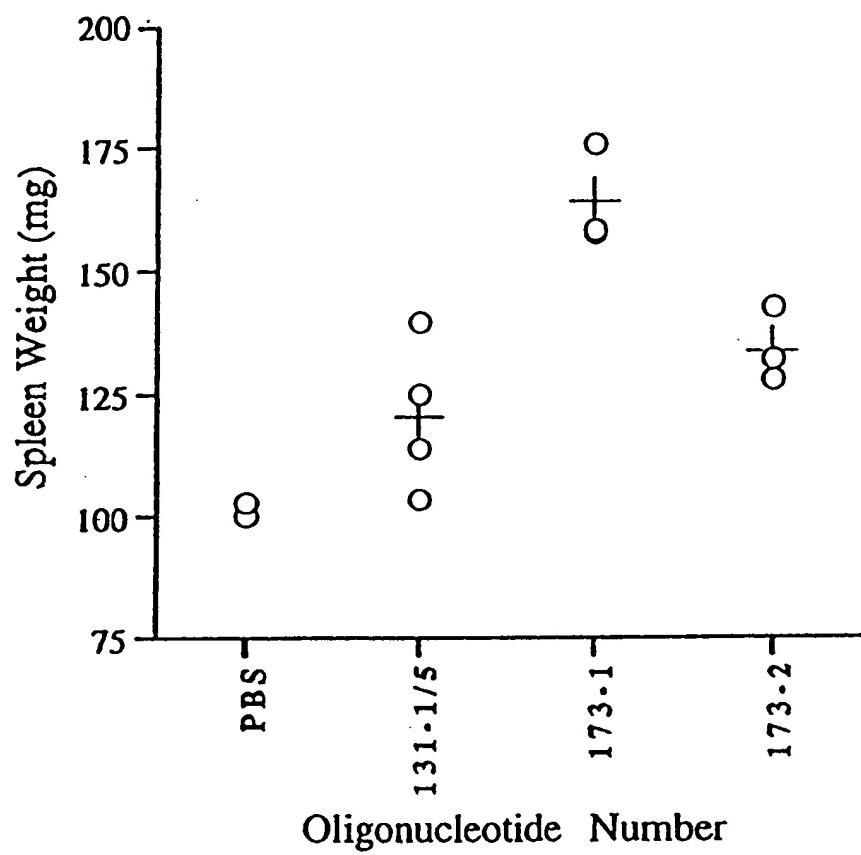


FIG. 19B

40/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
<u>SEQ ID NO.: 8</u>	133-1 5'-CCTACTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 91</u>	143-1 5'-CCTXXTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 92</u>	143-2 5'-CCTYYTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 93</u>	143-3 5'-CCTZZTAGCGTTCTCATC-3'
<u>SEQ ID NO.: 94</u>	143-4 5'-CCTXXTAGCGTVCTCATC-3'
<u>SEQ ID NO.: 95</u>	143-5 5'-CCTACTAGGGTTCTCATC-3'

X = 1',2'-Dideoxyribose
Y = C3-Linker
Z = 3'-OMe
V = 2'-OMe

FIG. 20A

41/53

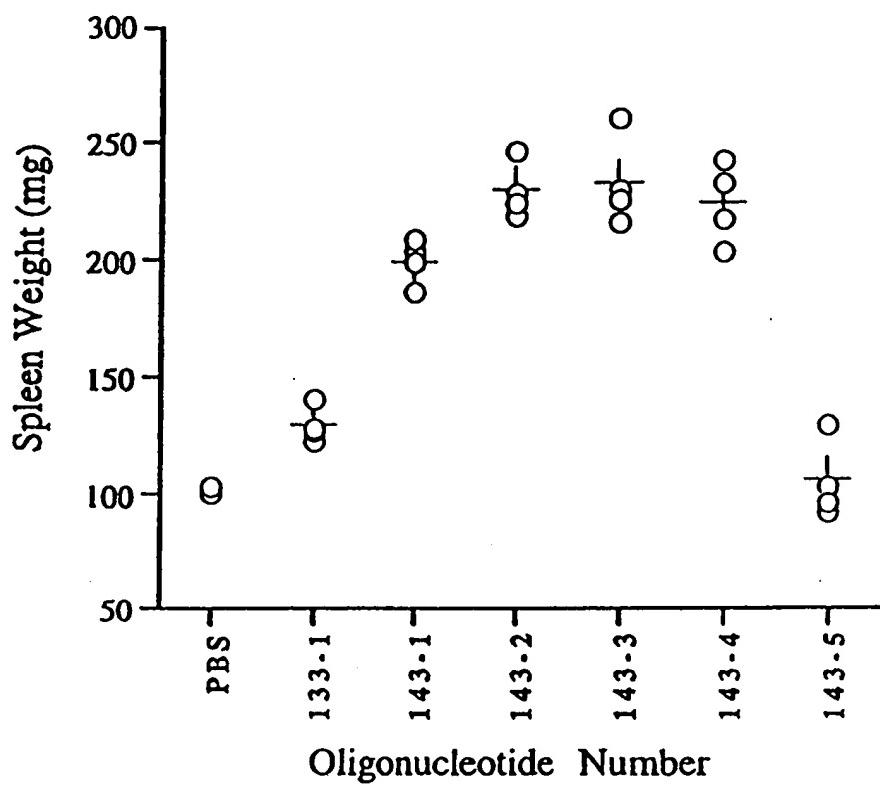


FIG. 20B

42/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND
MODIFICATION OF LINKAGES

<i>Oligo No.</i>	<i>Sequence & Modification</i>
<u>SEQ ID NO.: 1</u> 1	5'-CTATCTGAC <u>GTTCTCTGT</u> -3' (131-1)
<u>SEQ ID NO.: 96</u> 2	5'-CTATCTGAC <u>CG*TTCTCTGT</u> -3' (E 633L)
<u>SEQ ID NO.: 97</u> 3	5'-CTATCTGAG <u>*CTTCTCTGT</u> -3' (E 636)
<u>SEQ ID NO.: 98</u> 4	5'-TCTCCCAG <u>CGTGCGCCAT</u> -3'
<u>SEQ ID NO.: 99</u> 5	5'-TCTCCCAG <u>CG*TGCG*CCAT</u> -3' (E 603)
<u>SEQ ID NO.: 100</u> 6	5'-CTATXTGAC <u>CG*TTCTCTGT</u> -3' (E 639L)

FIG. 21A

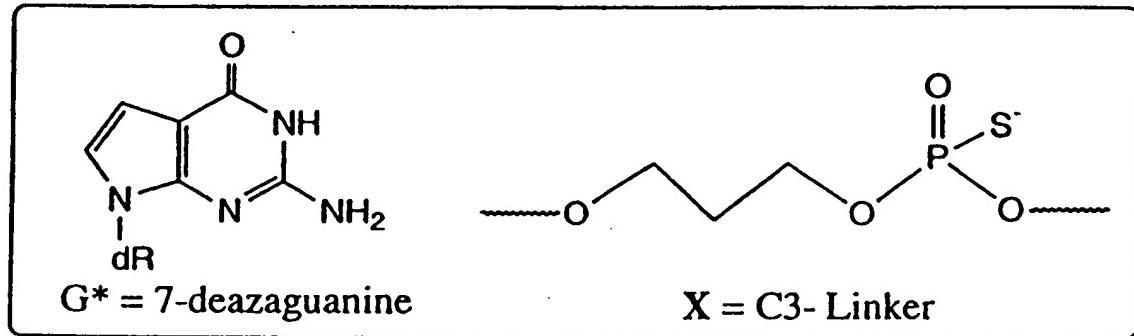


FIG. 21B

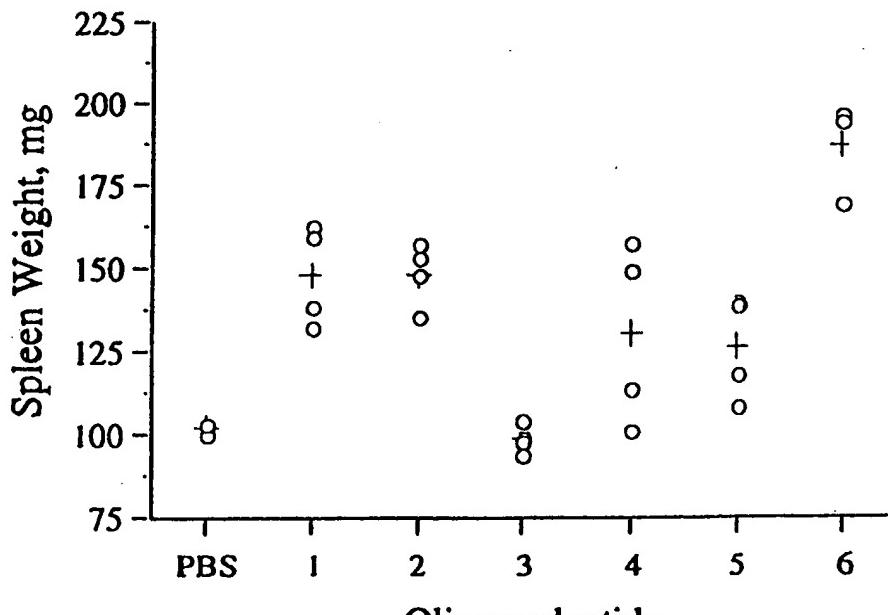


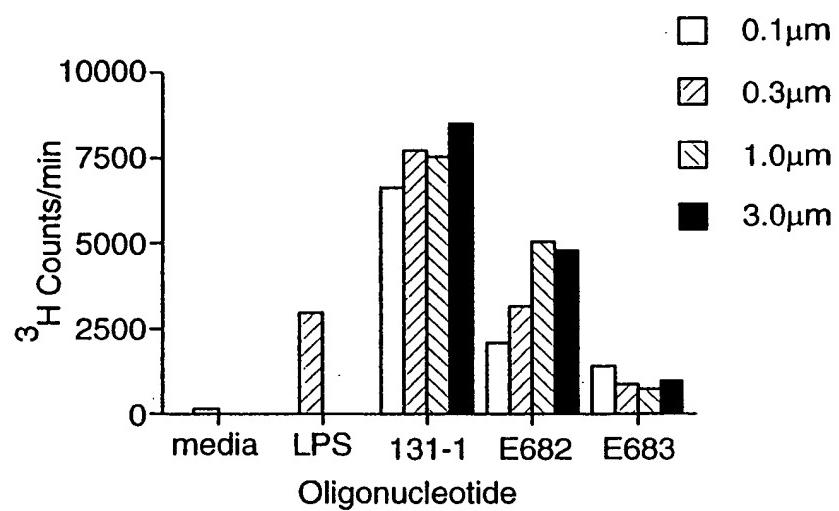
FIG. 21C

43/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
SEQ ID NO.: 1	5'-CTATCTGAC <u>G</u> TCTCTGT-3' (131-1)
SEQ ID NO.: 101	5'-CTATCTGAC <u>G</u> *TTCTCTGT-3' (E 682)
SEQ ID NO.: 102	5'-CTATCTGAG* <u>G</u> TTCTCTGT-3' (E 683) dR G* = 6-thioguanine

FIG. 22A

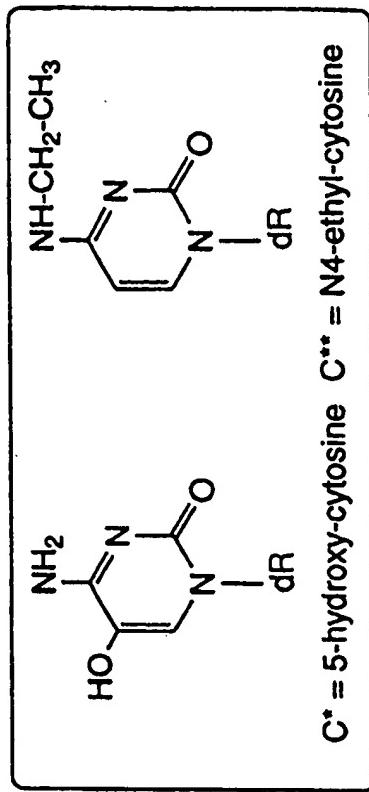
44/53FIG. 22B

45/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No. Sequence & Modification

<u>SEQ ID NO.: 1</u>	1	5'-CTATCTGAC <u>G</u> GTCTCTGT-3'
<u>SEQ ID NO.: 2</u>	2	5'-CTATCTGAC <u>G</u> TTCCTCTGT-3'
<u>SEQ ID NO.: 3</u>	3	5'-CTATCTGAC <u>CC</u> *TTCCTCTGT-3'
<u>SEQ ID NO.: 4</u>	4	5'-CTATCTGAC <u>CC</u> * <u>G</u> TTCCTCTGT-3'
<u>SEQ ID NO.: 5</u>	5	5'-CTATCTGAC <u>CC</u> * <u>T</u> TTCCTCTGT-3'

FIG. 23A

46/53

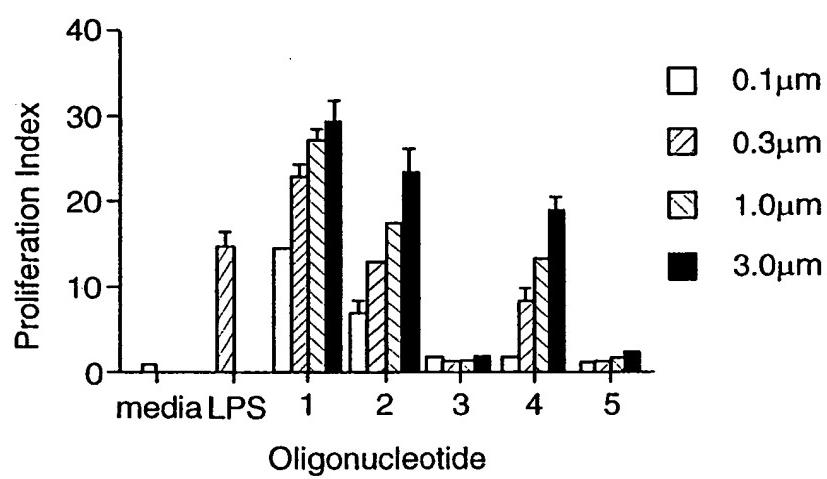
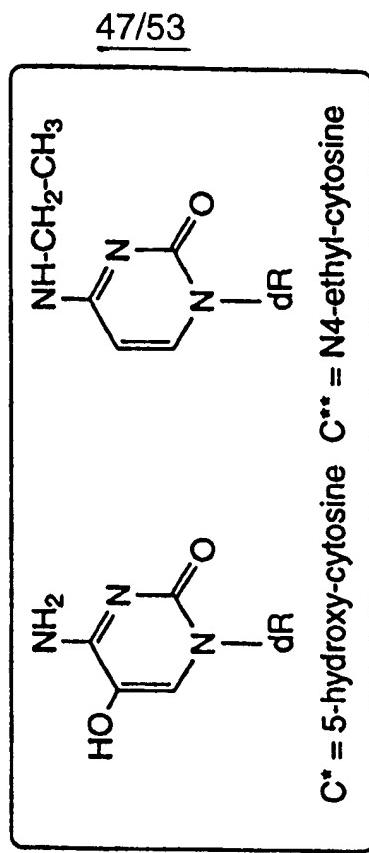


FIG. 23B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No. Sequence & Modification

<u>SEQ ID NO.: 1</u>	1	5'-CTATCTGAC <u>G</u> GT <u>T</u> CT <u>C</u> TGT-3'
<u>SEQ ID NO.: 2</u>	2	5'-CTATCTGAC* <u>G</u> T <u>T</u> CT <u>C</u> TGT-3'
<u>SEQ ID NO.: 3</u>	3	5'-CTATCTGAC <u>C</u> <u>A</u> <u>C</u> * <u>T</u> <u>T</u> CT <u>C</u> TGT-3'
<u>SEQ ID NO.: 4</u>	4	5'-CTATCTGAC** <u>G</u> T <u>T</u> CT <u>C</u> TGT-3'
<u>SEQ ID NO.: 5</u>	5	5'-CTATCTGAC <u>C</u> <u>A</u> <u>C</u> * <u>T</u> <u>T</u> CT <u>C</u> TGT-3'

FIG. 24A

48/53

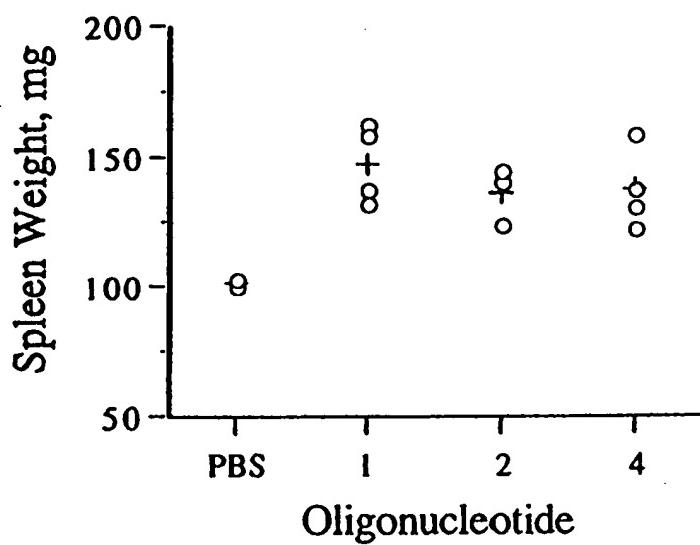
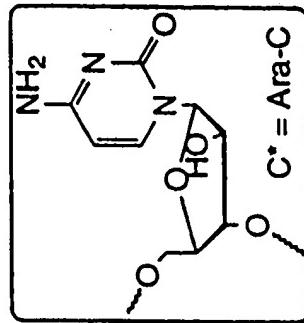


FIG. 24B

49/53

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

<i>Oligo No.</i>	<i>Sequence & Modification</i>
<u>SEQ ID NO.: 1</u>	5'-CTATCTGAC <u>G</u> TCTCTGT-3'
<u>SEQ ID NO.: 111</u>	5'-CTATCTGAC <u>C*</u> GTTCTCTGT-3'
<u>SEQ ID NO.: 112</u>	5'-CTATCTGAC <u>C*</u> TTCTCTGT-3'



C* = Ara-C

FIG. 25A

50/53

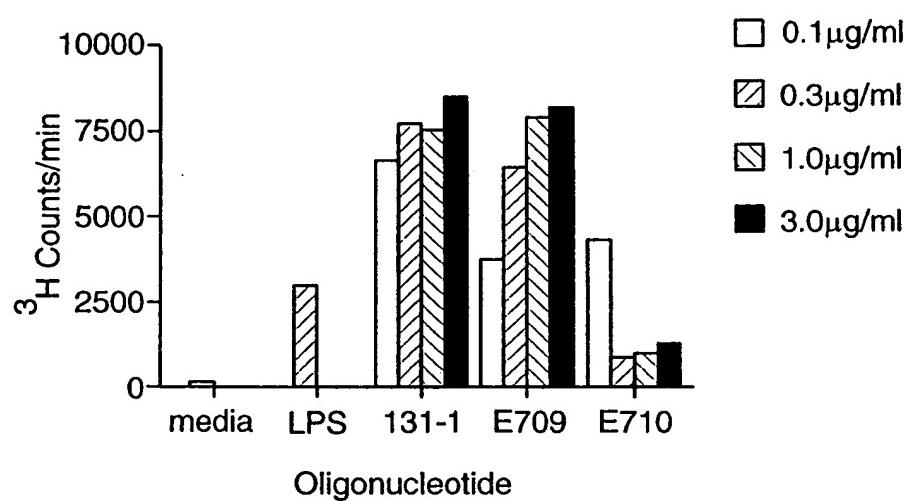


FIG. 25B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No. Sequence & Modification

<u>SEQ ID NO.:</u>	<u>1</u>	1 5'-CTATCTGAC <u>GT</u> TCTGTGT-3' (131-1)
<u>SEQ ID NO.:</u>	<u>103</u>	2 5'-CTATCTGAC* <u>GTT</u> TCTGTGT-3' (E 647)
<u>SEQ ID NO.:</u>	<u>3</u>	3 5'-CTATXTGAC* <u>GTT</u> TCTGTGT-3' (E 653)
	<u>104</u>	

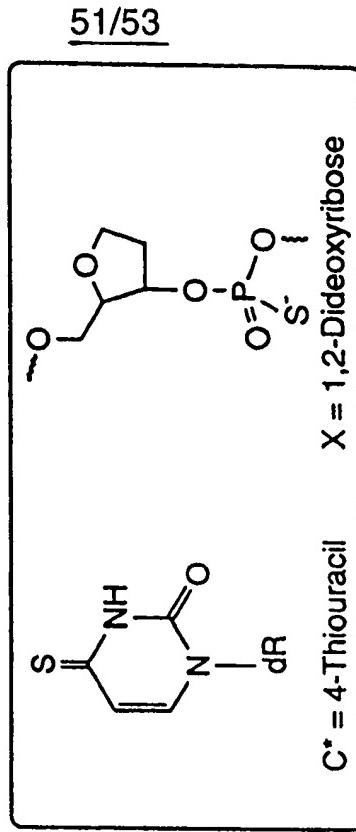


FIG. 26A

52/53

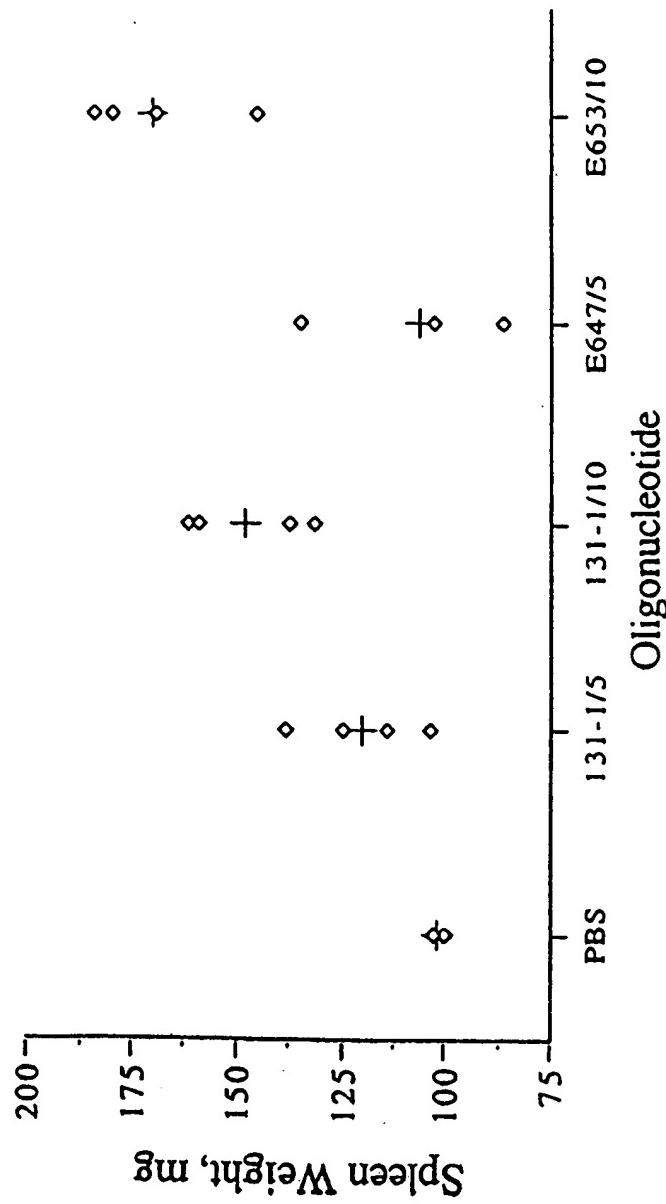


FIG. 26B

